SAMSUNG

SERVICE MANUAL

DVD-R130

SAMSUNG

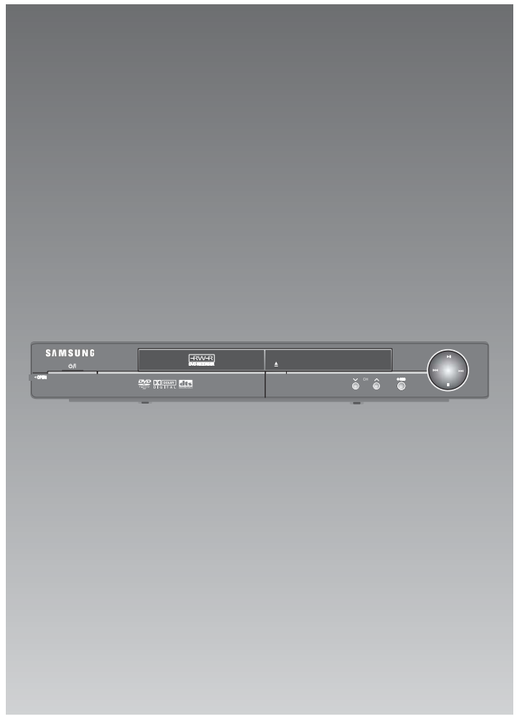
DVD- RECORDER

Chassis : ANDES (3rd Generation)

DVD-R130/XAA, XAC

SERVICE Manual

DVD-RECORDER



Main Features

1. Multi format recording
   DVD-RW/ DVD-R
2. Multi format playback
   DVD/ DVD-RAM/ DVD-RW/ DVD-R
   CD/ CD-R/ CD-RW/ MP3/ JPEG/
   VCD(Canada Only)
3. Recording mode
   XP(1Hour)/ SP(2Hour)/ LP(4Hour)/ EP(6~8Hour)
4. Progressive scan
5. Automatic Chapter product on
6. 49mm Slim Design
7. Quick Recording

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1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.
Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

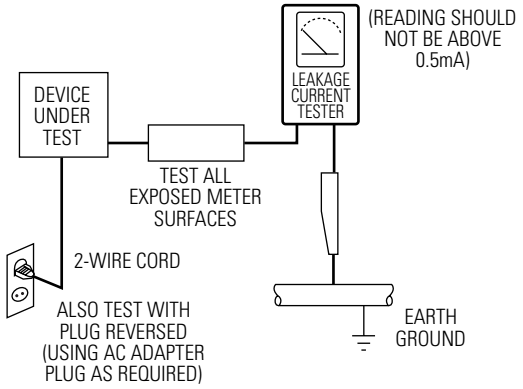

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.

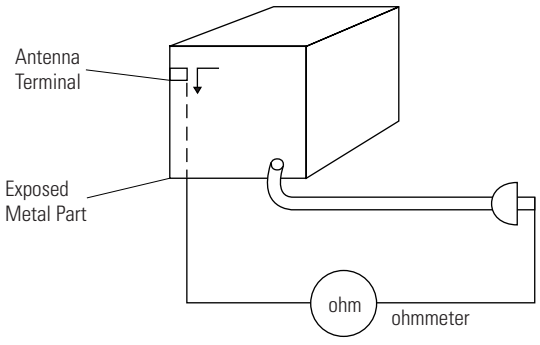


Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚡)or a (⚠)on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components identified by shading, by(⚠) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

- Be sure to put on a wrist strap grounded to the sheet.
- Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

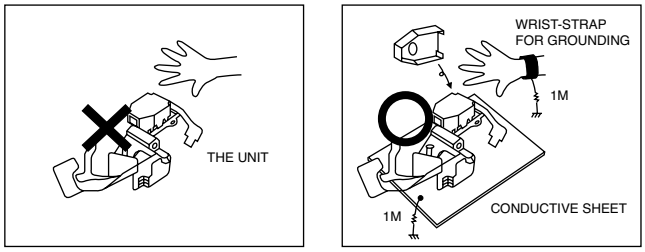


Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

MEMO

2. Product Specification

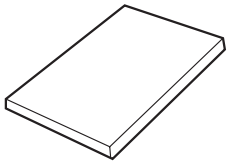
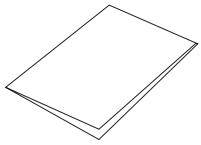
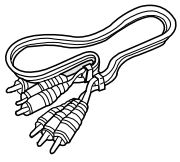
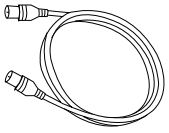
2-1 Product Specification

General	Power requirements	120V AC,60Hz
	Power consumption	19Watts
	Weight	5.07 IB
	Dimensions	16.9inch(W) x 8.2inch(D) x 1.9inch(H)
	Operating temp	+41°F to 95°F
	Other conditions	Keep level when operating. Less than 75% operating humidity
Input	Video (1,2)	1.0 V p-p at 75ohm load, sync negative
		S-Video input (Y:1.0Vp-p, C: 0.286Vp-p at 75ohm load)
	Audio (1,2)	Max. Audio input level : 2Vrms
	DV Input	IEEE 1394(4p) compatible jack
	Receivable Channels	Regular TV broadcasting : VHF (2~13), UHF (14~69)
		Cable TV broadcasting: 1~125
Output	Audio	Audio output jacks 1,2
		Optical/coaxial digital audio output
		Full scale analog output level : 2Vrms
	Video	Video output jacks 1,
		S-Video output 1 (Y: 1.0Vp-p, C:0.286Vp-p at 75 ohm load)
		Component output (Y: 1.0Vp-p ,Pb:0.70Vp-p, Pr:0.70Vp-p at 75ohm load)
Recording	Picture compression format	MPEG-II
	Audio compression format	Dolby digital 2ch/256kbps
	Recording Quality	XP (about 8 Mbps), SP (about 4 Mbps), LP (about 2 Mbps),
		EP (about 1.2 Mbps), FR (about 1.2 Mbps to 8Mbps)
	Audio frequency characteristics	20 Hz ~ 20 KHz

2-2 Chassis Product Specification

General	Model Name	DVD-R130/XAA
Info	Function	Standard
SYSTEM	COLOR SYSTEM	NTSC
	BROADCAST SSTEM	M
	AUTO CLOCK	O
RECORER FUNCTION	DVD-RAM	-
	DVD-R	O
	DVD-RW	O
	VIDEO	MPEG-2
	AUDIO	2ch
	DVD-RAM/-R(4.7GB)	O
	HDD	-
	Flexible Recording	O
	OTR	O
	Time Slip	-
	VCR+Plus	-/-
	Quick Dubbing	-
	EPG(Gemstar)	-
SUB FUNCTION	IR Blaster	-
	Play Lis	O
	Auto Chaptering	O
	JPEG Browser with BG music	-
	DV Input	O
	10in2 Memory Slot	-
PLAYBACK FUNCTION	DVD-RAM/-R/-RW	O/O/(O)
	DVD-Video/VCD/CD-DA	O/-/O
	CD-R/RW	O/O
	Music CD	O
	MPEG4/Divx	-/-
	Multi Memory Card	-
	Progressive Scan Output	O
	Upscaling(720P/1080i)	-
IN/OUT	DV/AV1/AV2/CH	O/O/O/O
	Video Input	2ea
	Video Output	1ea
	S-Video Input	1ea
	S-Video Output	1ea
	Component Output	1ea
	HDMI Output	-
	Analog Audio Input(L/R)	2sets
	Analog Audio Output(L/R)	2sets
	Optical/Coaxial	O/O
ETS	Panel disply	LED Module
	REMOCON	Multi 47key
	IB	English
	Size: Net(W x H x D)	430X49.5X210
	Weight	2.3Kg

2-3 Option Product Specification

Description Fig	Description	Parts No	Remark
	Remote Control	(AK59-00055A)	Model Standard of DVD-R130/XAA
	Batteries for Remote Control	(AC43-12002H)	Model Standard of DVD-R130/XAA S.N.A
	User's Manual	(AK68-01002A)	Model Standard of DVD-R130/XAA
	Quick Guide	(AK68-01013A)	Model Standard of DVD-R130/XAA S.N.A
	Video/Audio Cable	(AC39-00073A)	Model Standard of DVD-R130/XAA
	RF Cable	(AC39-42001J)	Model Standard of DVD-R130/XAA

2-4 Introduction to DVD

2-4-1 The Definition of DVD

DVD is the next generation medium and is the acronym of the Digital Versatile Disc or thr Digital Video Disc, which maximizes the saving density of the disk surface using the MPEG-2 compression technology to enable the storage of 17G bytes of data on the same size CD.

1) 7 times the storage capacity of the conventional CD

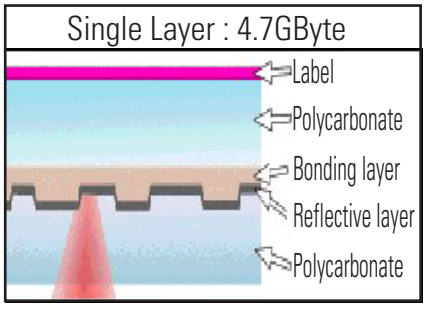
- Minimized the track pitch and pit size to 1/2 of conventional CD.
- Uses red laser with short-wavelenght of 650nm (635nm).

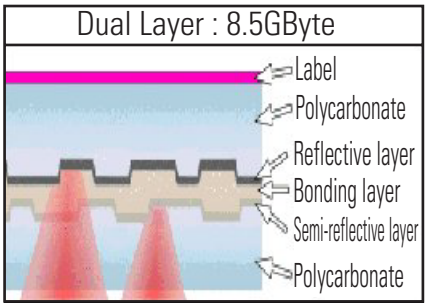
DVD Vs. CD-ROM

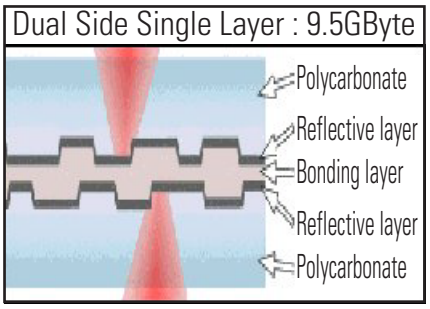
	CD-ROM	CD-R/RW	DVD-ROM	DVD-R/RW	DVD-RAM
Disc Thickness	1.2mm	1.2mm	0.6*2mm	0.6*2mm	0.6*2mm
Lens NA	0.45	0.45(0.5)	0.6	0.6	0.6
Laser wavelenght	780um	780um	650um	650um	650um
Track pitch	1.6pm	1.6pm	0.74pm	0.74pm	0.615pm
Capacity	0.65GB	0.65GB	4.7GB	4.7GB	4.7GB
Track structure	Pit train	Groove	Pit train	Groove	Land/Groove

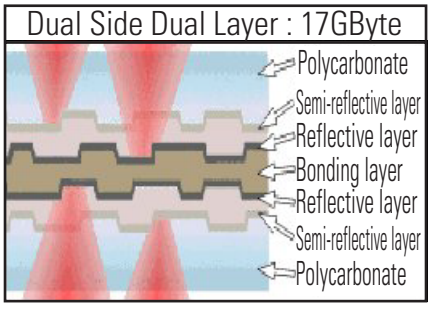
2) Disc Formats

DVD consists of two 0.6mm discs attached together, enabling access to the upper and lower side of the disk, and 4 sides could be used at maximum.









2-4-2 DVD Types

FORMAT	TYPE	APPLICATIONS
DVD-Video	Playback Only	High quality image and sound for movies and other video media.
DVD-ROM	Read Only	Multi-functional, multi-media software that requires large storage capacity.
DVD-Audio	Playback Only	High quality sound that exceeds the CD, multi-channel Audio.
DVD-R	1 Time Recording	As with CD-R, write only once
DVD-RAM	Rewritable (more than 100,000 times)	This can be virtually used as hard-disk, with a random read-write access
DVD-RW	Rewritable (About 1,000 times)	Similar to DVD-RAM except than its technology features a separated read-write access more like phonograph than a hard disk.

2-5 DVD-Video Fromat

2-5-1 Main Features

1) Able to store up to 160 minutes of Movie by utilizing the MPEG-2 compression technology. (Aver. 133min.)

2) Enables more than 500 lines of horizontal resolution. (Class corresponding to the Master Tapes used in broadcasting stations)

3) Provides Dolby Digital 5.1ch Surround 3D sound, which enables theater quality sound (NTSC area).
- For PAL areas, 1 of either MPEG-2 Audio or Dolby Digital must be selected.

4) Multi-Language
- Able to store up to 8 languages of dubbing.
- Able to store up to 32 subtitle languages.

5) Multi-Aspect Ratio
3TV Mode alternatives ; 16:9 Wide Screen (DVD Basic)/4:3 Pan & Scan/Letter Box.

6) Multi-Story
Possible to implement Interactive Viewing which enables the user to select the scenario.

7) Multi-Angle
Able to view the camera angle you selected among the scenes recorded with multiple camera angles.

Note ; The above media features must have the DVD Title that contains the appropriate contents to function properly.

2-5-2 Audio & Video Specifications

<table>
<tr><th colspan="2">Classification</th><th colspan="2">DVD-Video</th><th>Video-CD</th><th>LD</th></tr>
<tr><td rowspan="6">VIDEO</td><td>Compression</td><td colspan="2">MPEG-2</td><td>MPEG-1</td><td rowspan="2">Analog</td></tr>
<tr><td>Pixel</td><td colspan="2">720 x 480</td><td>352 x 240</td></tr>
<tr><td>Horizontal resolution</td><td colspan="2">Max. 500 Lines</td><td>Max. 250 Lines</td><td>Max.420 Lines</td></tr>
<tr><td>Compression rate</td><td colspan="2">1/40</td><td>1/140</td><td rowspan="2">Analog</td></tr>
<tr><td>Transmission speed</td><td colspan="2">Max. 9.8Mbps (variable)</td><td>1.15Mbps (fixed)</td></tr>
<tr><td>TV aspect</td><td colspan="2">16:9 / 4:3</td><td>4:3</td><td>4:3</td></tr>
<tr><td rowspan="6">AUDIO</td><td>Audio</td><td colspan="2">Max. 8 streams</td><td>2CH stereo</td><td rowspan="6">2 Analog CH.
2 Digital CH.
(16Bit/44.1KHz)
or
1 Analog CH.
1 Stream of Dolby Digital
2 Digital CH.
(16Bit/44.1KHz)</td></tr>
<tr><td>Recording type</td><td>Dolby Digital</td><td>Linear PCM</td><td>MPEG-1 Layer 2</td></tr>
<tr><td>Transmission rate</td><td>448Kbps/stream</td><td>6.144Mbps/stream</td><td>224Kbps</td></tr>
<tr><td>Channel</td><td>5.1CH/stream</td><td>8CH/stream</td><td>2CH</td></tr>
<tr><td>Sampling frequency</td><td>48KHz</td><td>16, 20, 24Bit/48, 96KHz</td><td>16Bit/44.1KHz</td></tr>
</table>

2-5-3 Detailed Feature

DVD-Video Feature 1 — **When Developing the DVD Software, various addition and modification is possible.**

As the storage capacity increases, the DVD-Video separates the main data and the additional data such as the Multi-Function into different data areas, enabling the control of time-data ratio to provide the format that enables the flexible Software development

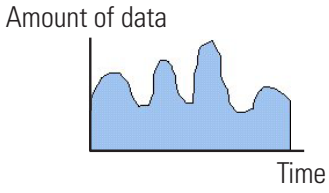
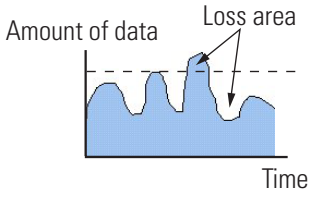
- 1 Movie (3.5Mbps)
  + Subtitle (1 Language)
  + Surround Audio (1 Language)
  = 160min storage (4.673Gbytes)

- 1 Movie (3.5Mbps)
  + Subtitle (4 Language)
  + Surround Audio (4 Language)
  = 160min storage (4.680Gbytes)

- 1 Music Video (4Mbps)
  + 2ch High quality Audio (96kHz/24bit)
  = 72min storage (4.648Gbytes)

DVD-Video Feature 2 — **Application of the MPEG-2 compression technology.**

DVD-Video uses the variable compresion technology, the MPEG-2 to compress the moving image optimally, minimizing the Data loss to Provide a clear, natural screen while increasing the storage time.

DVD-Video	• MPEG-2 (Variable compression : Max. 1/40) - Field unit compression. - Compression rate change according to the amount of Data. - Differentiates the still image and the moving image compression rate, reducing Data loss and enables efficient compression.	
Video-CD	• MPEG-1 (Fixed compression : Max. 1/140) - Frame unit compression. - Compresses all data using the same ratio. - Fast movements are jagged, and unnatural	

DVD-Video Feature 3 | **High quality surround audio.**

DVD-Video can store the audio using the 5.1ch Dolby Digital compression or the advanced Liner PCM method, providing the better-than-CD quality and theater like audio quality.

- DTS (Digital Theater System)
  Home theatre and music playback in the home, DTS provides high quality 5.1-channel surround sound with many extras not offered by other consumer formats. As well as handling DTS-branded releases from a growing number of music labels and consumer software producers, DTS provides enhanced 6.1 matrix and DTS 6.1 discrete decoding that envelopes the listener in sound. DTS technology is featured in a wide cross section of receiver/pre-amplifiers, DVD players and and add-on components from leading consumer audio vendors

- Dolby Digital (AC-3)
  - Unlike the traditional Dolby pro-Logic method, the Dolby Digital method separates all 5 main channels (Front L/R, Center, Surround (Rear) L/R)and the Sub woofer to provide live surround audio.
  - Using the Down Mix method, the conventional Dolby Pro-Logic and Stereo are all compatible.
  - Each separated channels are played back at CD quality sound. (Frequency band: 20Hz ~ 20KHz)

- Linear PCM (Pulse Code Modulation)
  - Provides the high quality Digital sound without the audio data compression.
  - Various Digital Recordings are possible as shown in the table to the right.

Sampling Frequency	Bit Rate
48KHz	16bit
	20bit
	24bit
96KHz	16bit
	20bit
	24bit

- Dolby Digital compatible Audio Mode

Audio Coding Mode	Channel Format					Remark
		Front		Surround (Rear)		
	L	C	R	L	R	
1/0		0				Mono
2/0	0		0			Stereo
3/0	0	0	0			Surround
2/1	0		0	Mono		
3/1	0	0	0	Mono		
2/2	0		0	0	0	
3/2	0	0	0	0	0	

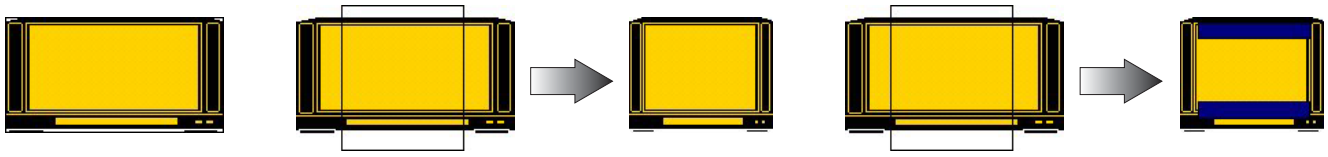
DVD-Video Feature 4 — Multi-Language

- Audio Dubbing - Max. 8 Languages
- Subtitle - Max. 32 Languages. Capable of storing, and selectiong.
- Linear PCM (Pulse Code Modulation)

DVD-Video Feature 5 — Multi-Aspect

- Unlike the conventional VCD or LD, DVD-Video has the default of 16:9 Wide, and can be viewed using the conventional 4:3 TV, enabling the expansion of viewer selection capabilities.

  - 16 : 9 TV : Wide Mode (16:9 Wide Full Screen)
  - 4 : 3 TV : Letter Box Mode, Pan & Scan Mode

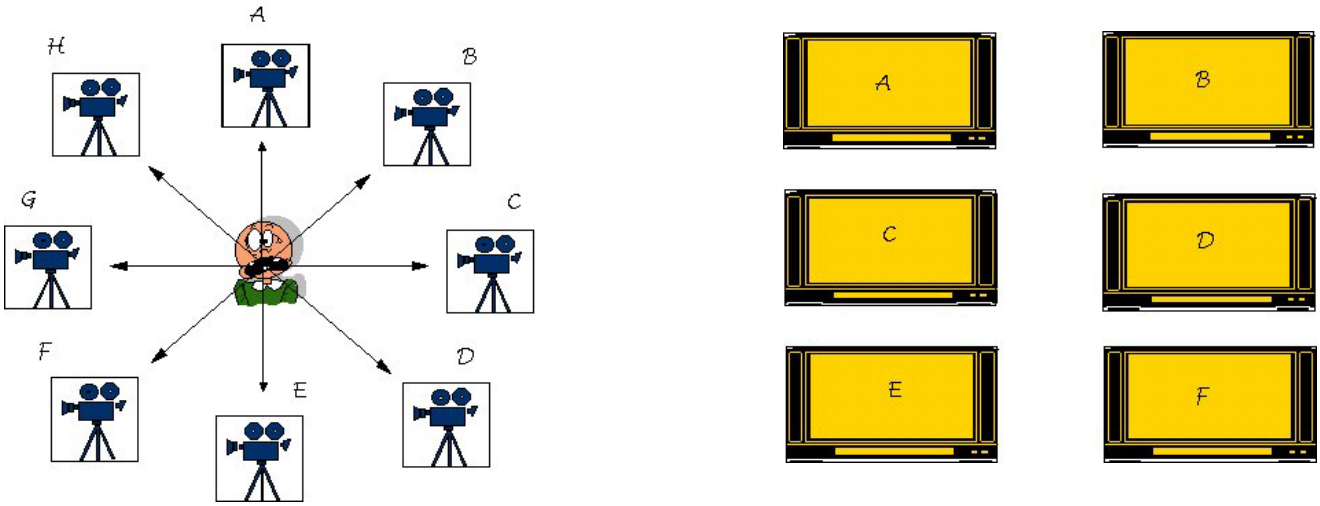


16:9 Wide | 4:3 Pan & Scan | 4:3 Letter Box

Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 6 — Multi-Angle

- Up to 9 angles of view may be stored, enabling the viewer to select a specific viewpoint at a given time.
  --> Especially, for the Music Video and Sports Title, this provides a more lively image of the scene.



Note ; This function is disc-dependent, may not work on all DVDs.

DVD-Video Feature 7	Multi-Story

- DVD-Video provides the enviroment suitable for the bi-directional Software develoment, providing multiple scenarios. This feature enables the Multi-Story function.

OPTION	Parental Lock

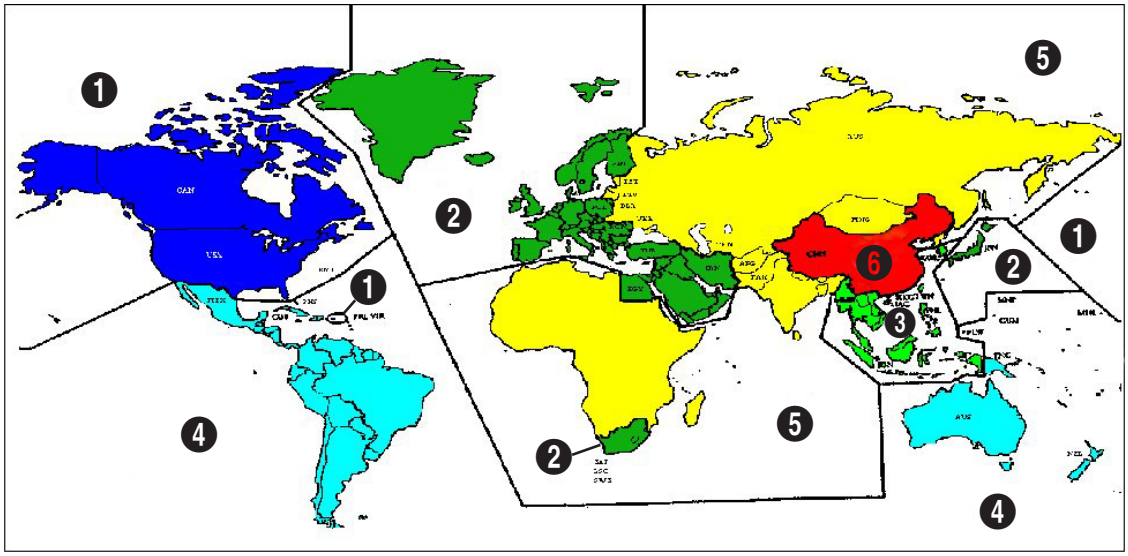
- For the titles that are not suitable for children viewing, Parental Locks are set, requesting user defined passwords for viewing
- Parential Locks may be set on specific frames of the Title, enabling the player to skip those frames during playback.

COPYRIGHT	Regional Code & Macrovision

- Classify the world into 6 regions, and if the DVD Title and the Player's "Reginal Code" do not agree, playback is prohibited.

- **Regionnal Coding is optional for the Soft developers (Region 0 All Code), but the Hardware developers must adopt the appropriate regionnal code for sale.**

  - Region 1 : The United States and its territories, Canada.
  - Region 2 : Europe, Japan, Greenland, Egypt, South Africa, the Middle East.
  - Region 3 : Taiwan, Hongkong, Korea, South East Asia.
  - Region 4 : Mexico, South America, Australia, New Zealand.
  - Region 5 : Russia, Eastern Europe, India, Africa.
  - Region 6 : China.
  - Region 0 : Worldwide (All Code)



- Adoptation of the Macrovision System disables the copying on to other media.

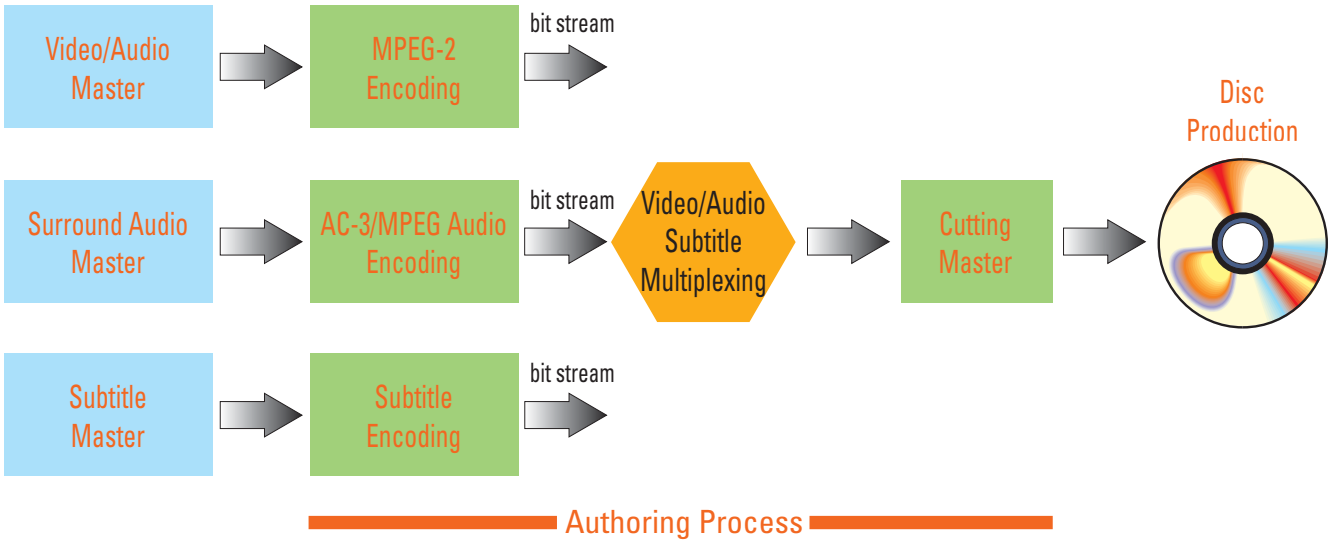
Remark

DVD-Video Authoring Process

- The image quality of the DVD-Video may vary accoring to the quality of the Master and the Authoring Process

  - The image quality of the DVD-Video varies according to the Digital Mastering Source such as the conventional LD, VCD, or Original Film.
  - Different Authoring Process are used accoring to the Software developers, and this may affect the DVD image quality.

- **Authoring Process**



MEMO

3. Software Update

3-1 Drive Firmware Update

3-1-1 Introduction

When you can not record and play on specific recording media (especially on newly available DVD-RW or DVD-R).

3-1-2 How to make an update disc

• Write the downloaded file onto a blank CD-R or CD-RW disc, using the following settings :

1) Download the software update file from the samsung internet site. (www.samsung.com)

2) Write the file to disc using the CD-RW of your computer.

NOTE

- Recommended Application Program
  - Nero Burning / Easy CD Creator ..etc
- Option
  - Extension name : "*.SMD"
  - Multisession : No Multisession
  - File name lenght : Max. of 11 = 8 + 3
  - Character set : ISO 9660 or Joliet Format
  - CD Close & Disc at once

WARNING

It is very important : please read the below notice below before updating your unit.

The following events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① Unplugging the power cord.

② Power Outage.

③ Dirt or Scratches on the disc.

④ Opening a disc tray during processing.

1) Press **OPEN/CLOSE** to open the disc tray.
2) Insert the update CD-R disc with the software update, label facing up.
3) Press **OPEN/CLOSE** to close the disc tray.

* It takes about 1~2 minites before the mesage below appears.

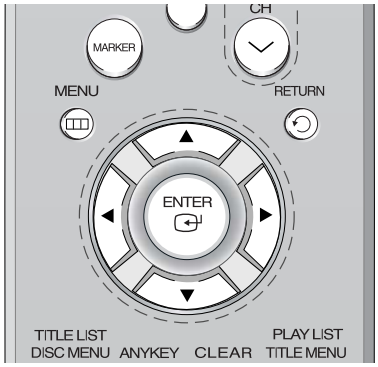


Fig. 3-2 Remote Control

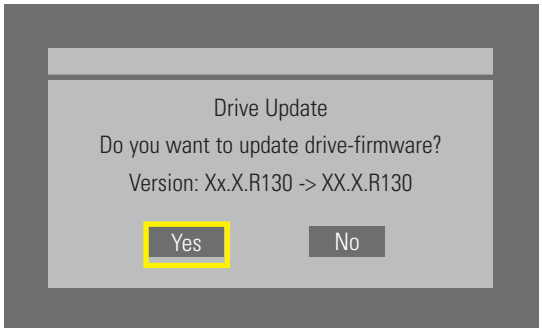


Fig. 3-1

Atfer checking old and new version, select "Yes" or "No" with " ◀ " or " ▶ " on the remote control.
* The Version is indicated by "XX.X modelname"

* If you don't see the message above, try another disc. Generally, this is caused by disc quality and by disc creating problem.

4) Press the **ENTER** button on the remote control (Fig. 3-2).

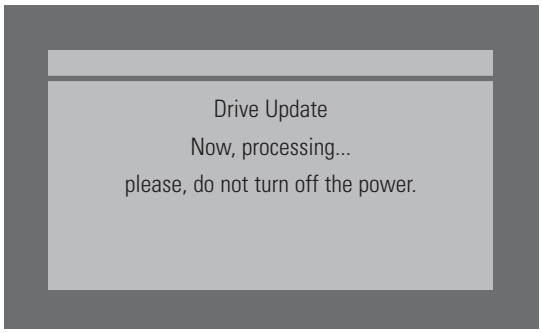


Fig.3-3

You will see "LOAD" on FLT Display.

5) It takes about 1~2 minutes to complete the update.
The message below will be displayed in the screen after update is completed and the tray will open automatically.

Fig. 3-4

Fig. 3-5

6) After removing the update disc, turn off the unit with power button.
And there after turn on the unit with power button and then the will be closed.
The drive firmware is now completed.

3-2 Flash Update (Main PCB)

3-2-1 Introduction

When you encounter a problem which is not related to the DVD drive.

3-2-2 How to make an update disc

Write the downloaded file onto a blank CD-R or CD-RW disc, using the following settings :

1) Download the software update file from the samsung internet site. (www.samsung.com)

2) Write the file to disc using the CD-RW of your computer.

NOTE

- Recommended Application Program
  - Nero Burning / Easy CD Creator ..etc
- Option
  - Multisession : No Multisession
  - CD close & disc at once
  - ISO 9660 or joliet format
  - Extension name : "*.RUF"
- In order to increase dise playability, add a dummy file (over 100MB) together with the latest program.
  (The dummy file can be used any kind of file except MP3 file etc which can be played in the unit and we recommend to use a file whin extension name as "*.dmy", which can be changed from original one.)

WARNING

It is very important : please read the below notice below before updating your unit.

The followong events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① Unplugging the power cord.

② Power Outage.

③ Dirt or Scratches on the disc.

④ Opening a disc tray during processing.

1) Press **OPEN/CLOSE** to open the disc tray.
2) Insert the update CD-R disc with the software update, label facing up.
3) Press **OPEN/CLOSE** to close the disc tray.

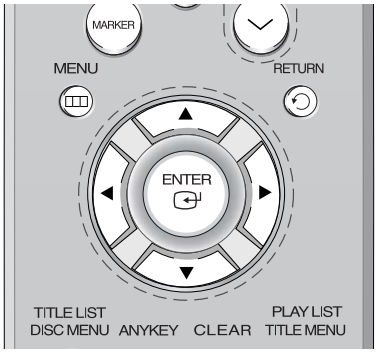


Fig. 3-7 Remote Control

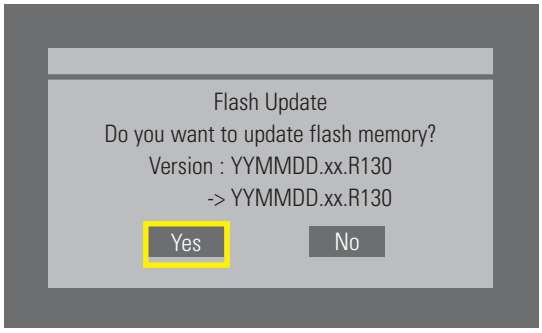


Fig. 3-6

Atfer checking old and new version, select "Yes" or "No" with " ◀ " or " ▶ " on the remote control.
* The Version is indicated by "YYMMDD.xx modelname"

* If you don't see the message above, try another disc.
Generally, this is caused by disc quality and by disc creating problem.

4) Press the **ENTER** button on the remote control (Fig. 3-7).

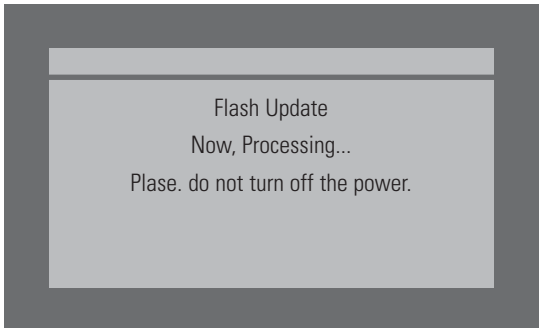


Fig. 3-8

5) It takes about 5 minutes to complete the update.
The message below will be displayed in the screen after update is completed and the tray will open automatically.

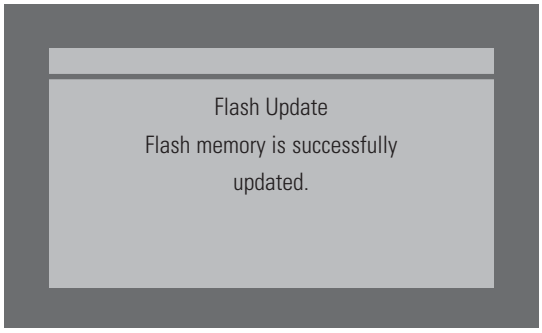


Fig. 3-9

* If the message to the left isn't displayed after 10minutes and the unit is no longer functioning properly, contact a samsung authorized service center.

6) After removing the update disc, turn off the unit with power button.
And there after turn on the unit with power button and then the will be closed.
The Flash update is now completed.

4. Disassembly and Reassembly

4-1 Cabinet and PCB

Note : Reassembly in reverse order.

4-1-1 Top Cabinet Removal

1) Remove 5 Screws ❶, ❷, ❸.
2) Lift up the Top Cabinet in direction of arrow.

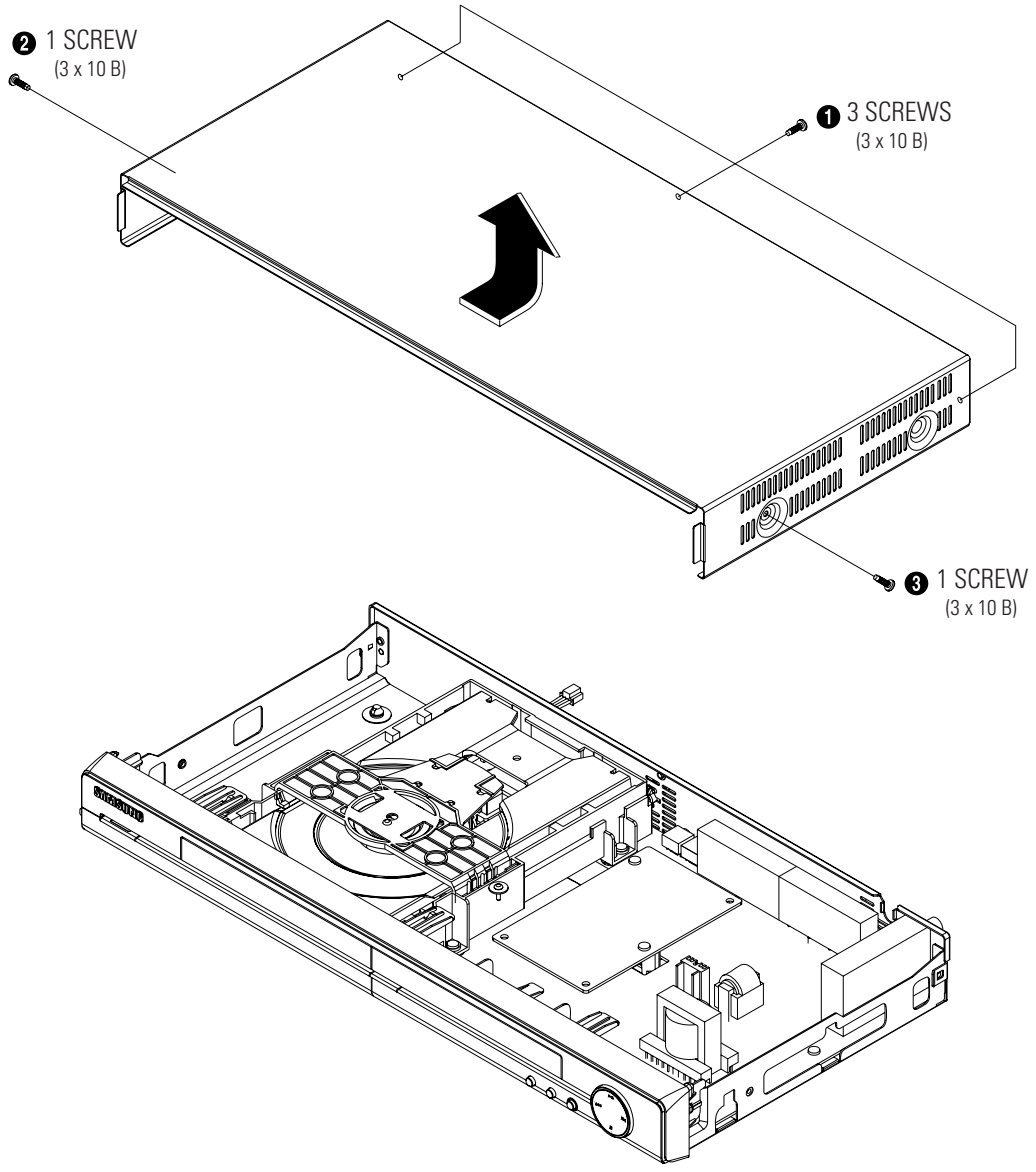


Fig. 4-1 Top Cabinet Removal

4-1-2 Ass'y Front-Cabinet Removal

1) Release 6 Hooks ❶, ❷, ❸, ❹ and Ass'y Front-Cabinet ❺.

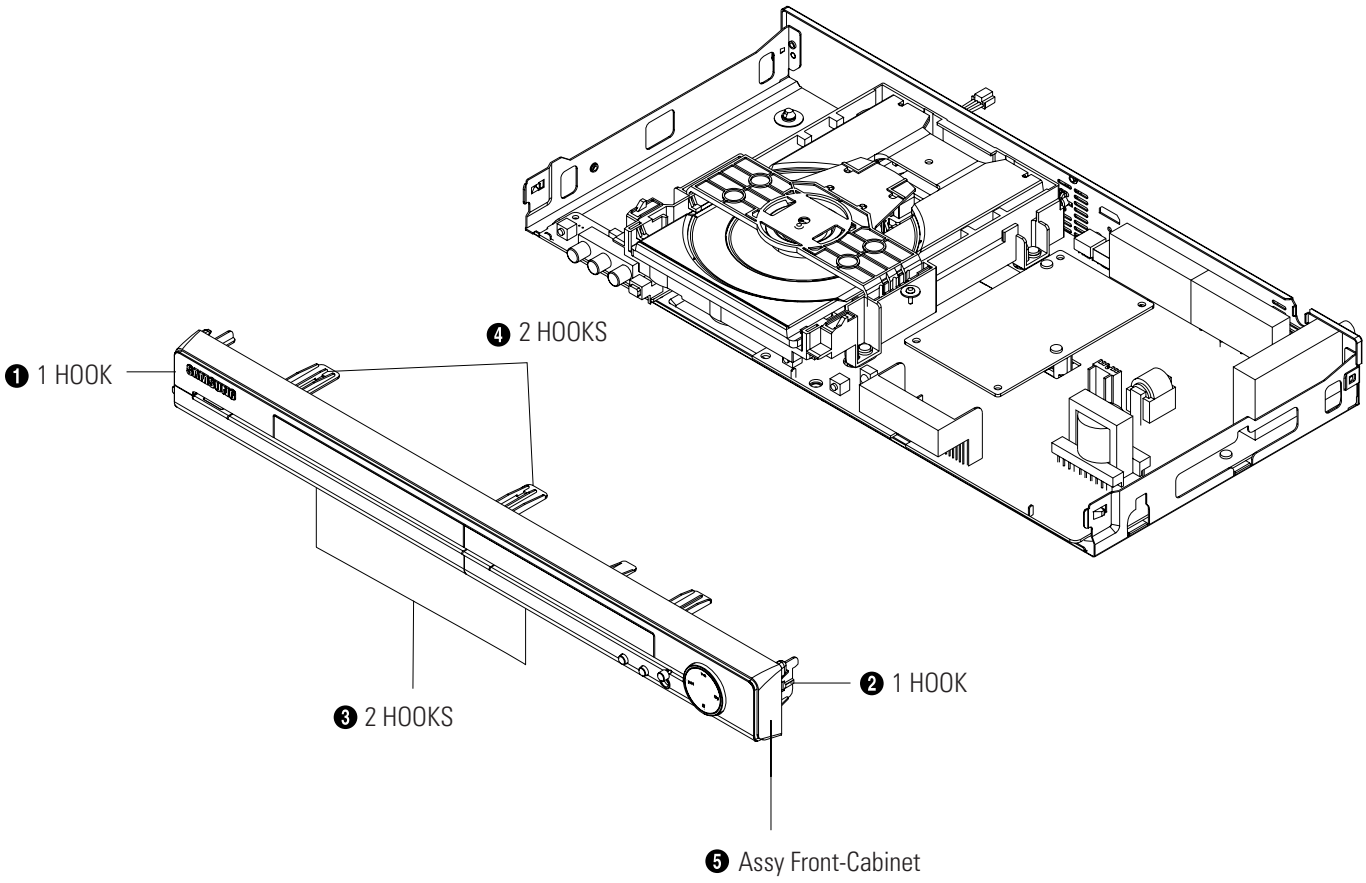


Fig. 4-2 Ass'y Front-Cabinet Removal

4-1-3 Ass'y Deck Removal

1) Remove 4 Screws ❶, ❷ from the Ass'y Deck ❸ and lift it up.

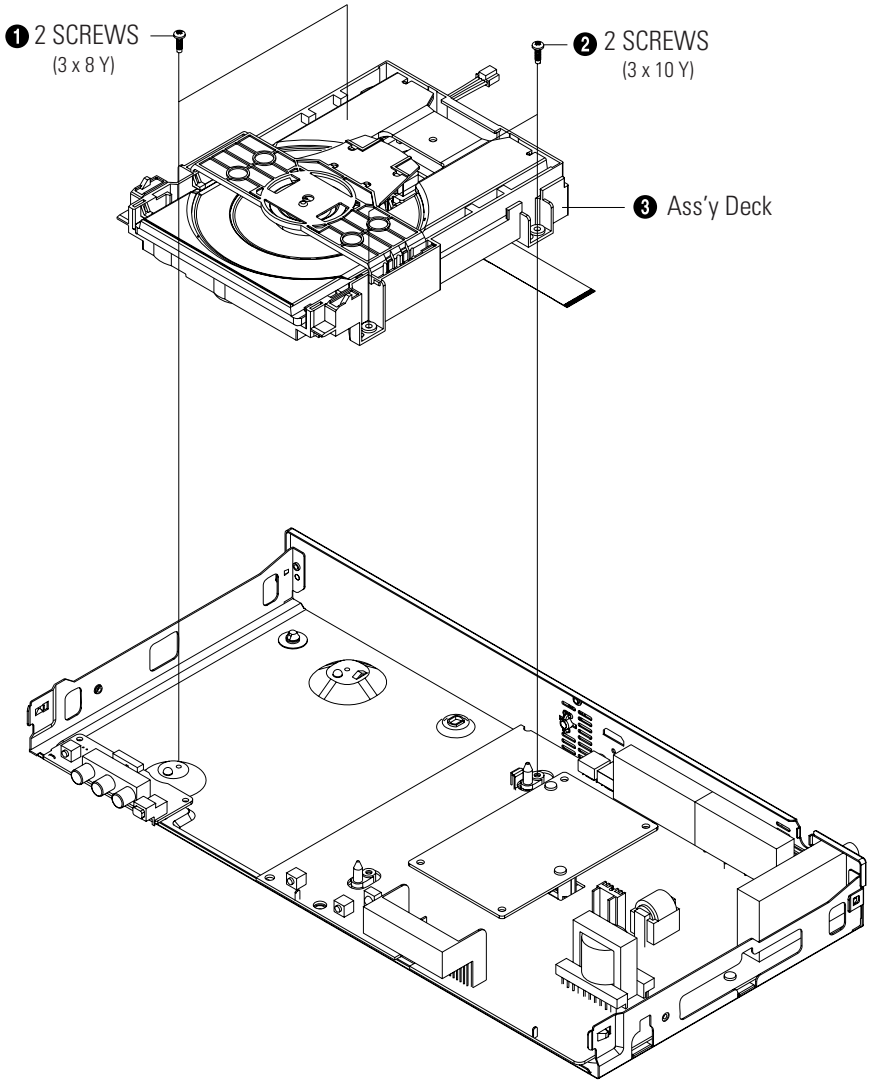


Fig. 4-3 Ass'y Deck Removal

4-1-4 Main PCB Removal

1) Remove 2 Screws ❶, from the Main PCB ❷ and lift it up.

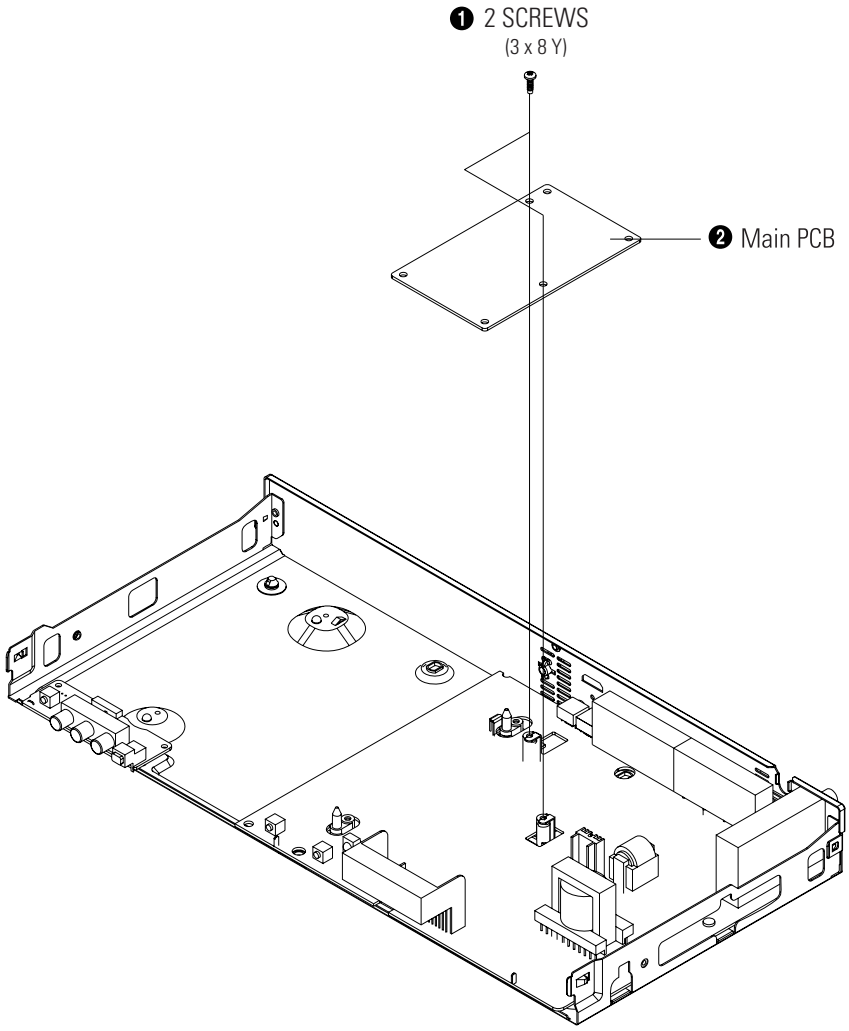


Fig. 4-4 Main PCB Removal

4-1-5 Jack PCB and Sub PCB Removal

1) Remove 5 Screws ❶, ❷ from the Jack PCB ❸ and lift it up.
2) Remove 1 Screw ❹ from the Sub PCB ❺ and lift it up.

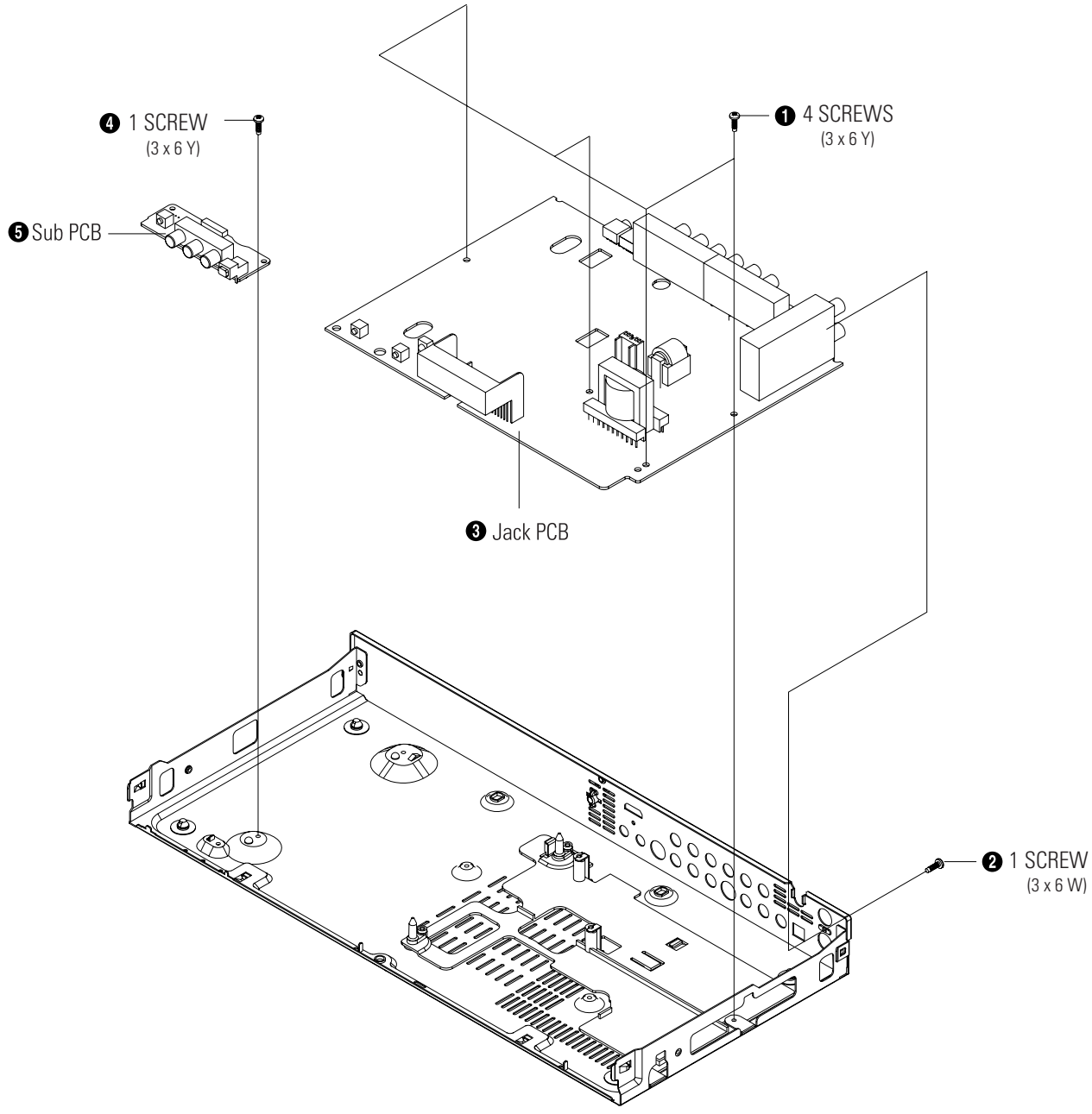


Fig. 4-5 Jack PCB and Sub PCB Removal

4-2 PCB Location

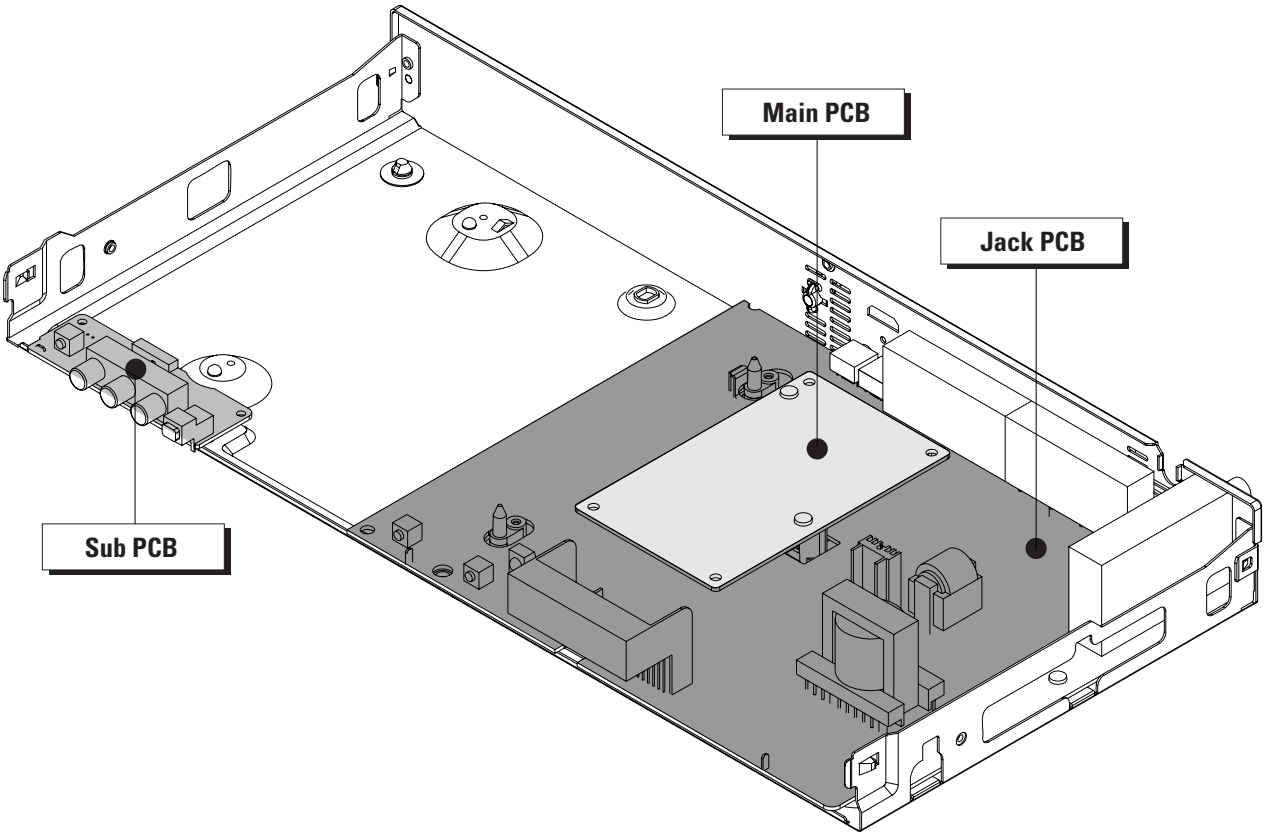
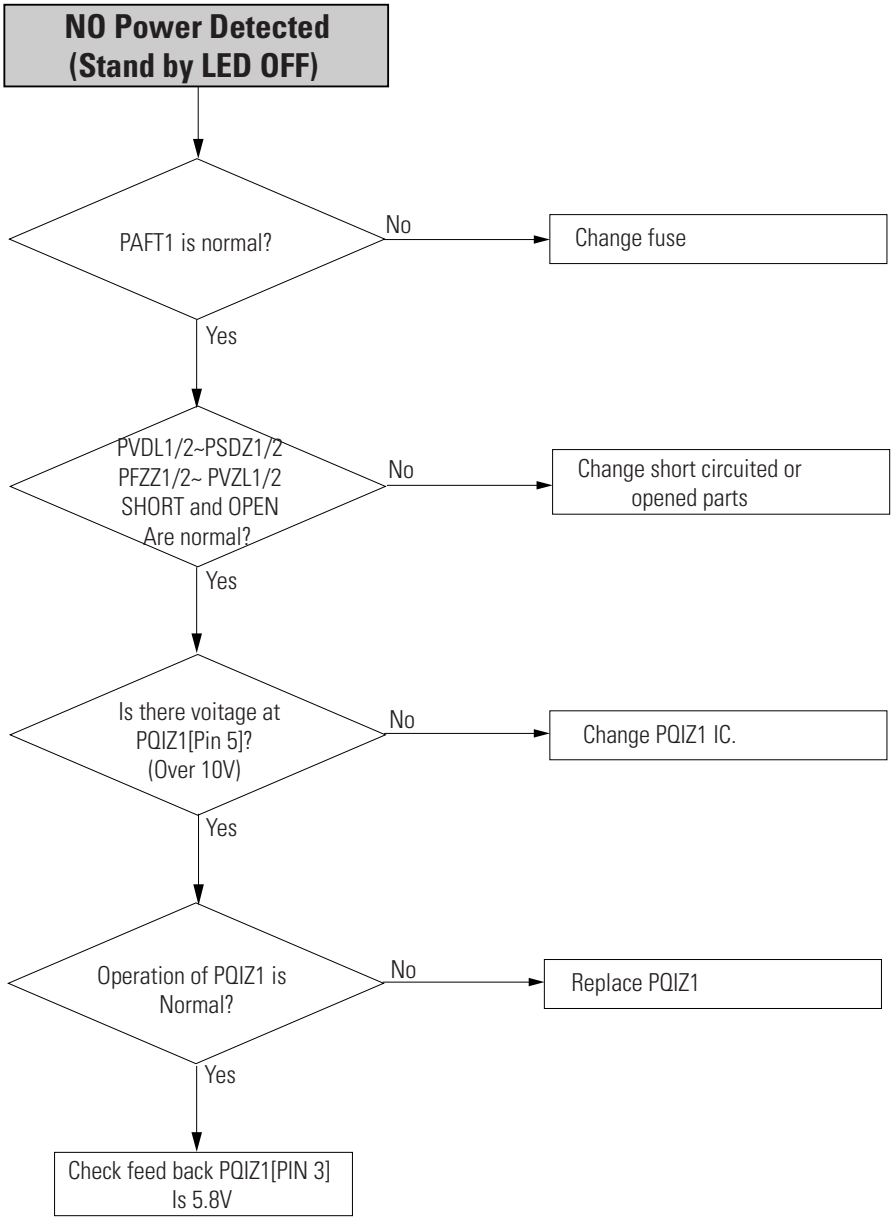
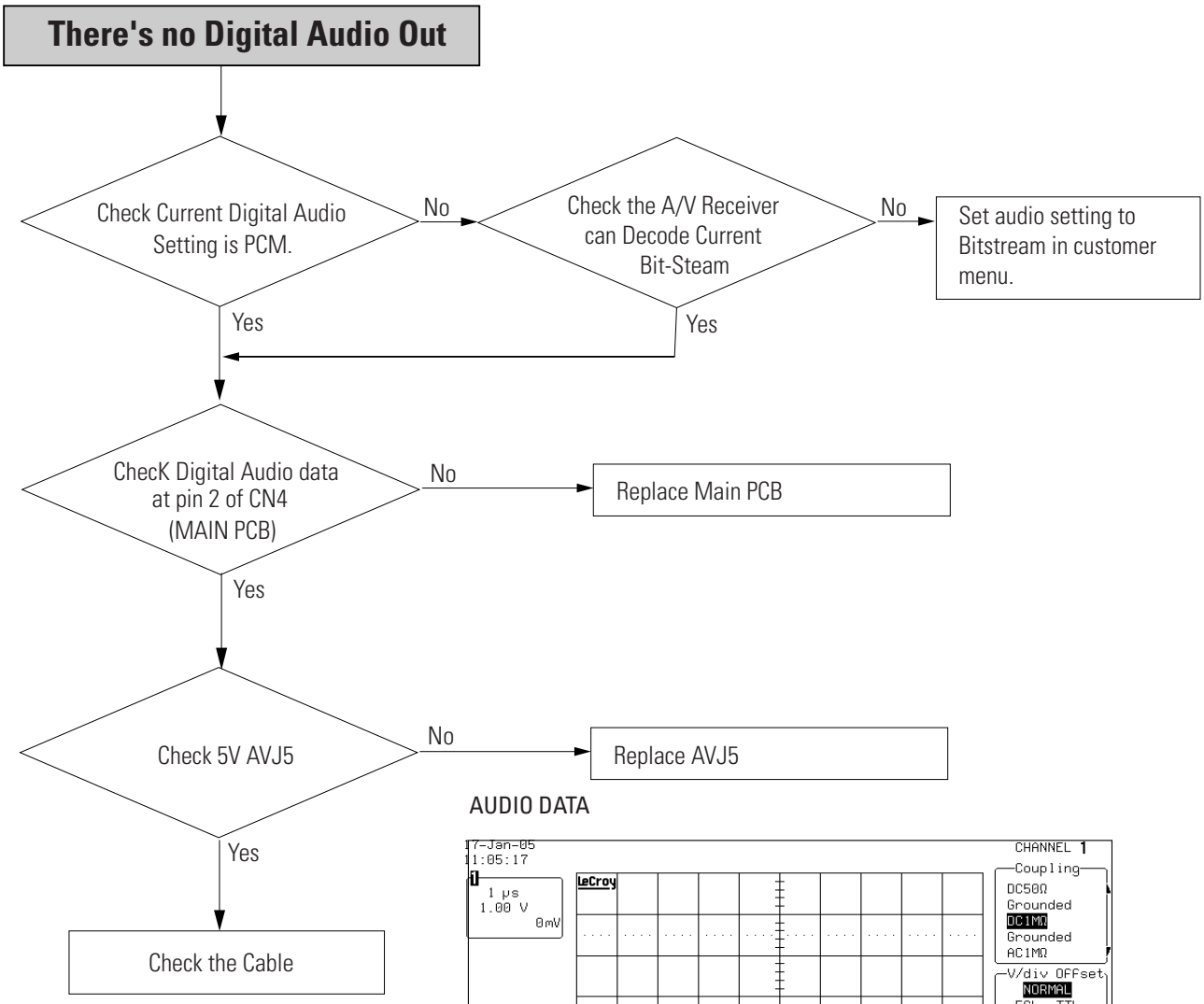


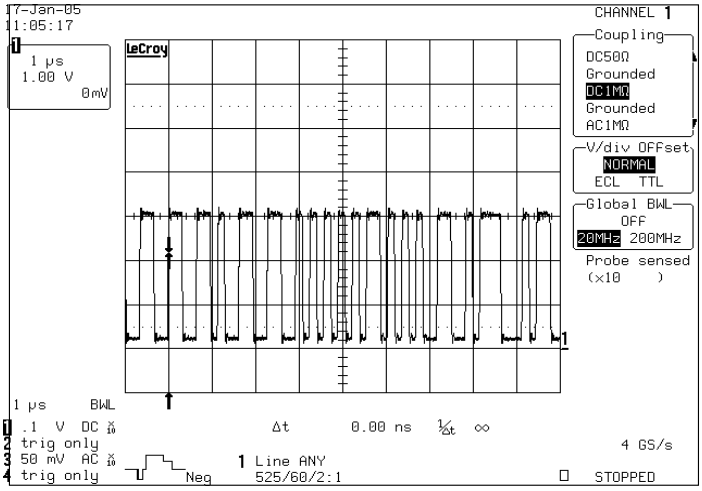
Fig. 4-6 PCB Location

5. Troubleshooting




There's no Digital Audio Out
Check Current Digital Audio Setting is PCM.
No
Check the A/V Receiver can Decode Current Bit-Steam
No
Set audio setting to Bitstream in customer menu.
Yes
Yes
CheckK Digital Audio data at pin 2 of CN4 (MAIN PCB)
No
Replace Main PCB
Yes
Check 5V AVJ5
No
Replace AVJ5
Yes
Check the Cable

AUDIO DATA


17-Jan-05
11:05:17
CHANNEL 1
LeCroy
1 µs
1.00 V
0mV
Coupling
DC50Ω
Grounded
DC1MΩ
Grounded
AC1MΩ
V/div OFFset
NORMAL
ECL TTL
Global BWL
OFF
20MHz 200MHz
Probe sensed
(×10)
1 µs BWL
.1 V DC
trig only
50 mV AC
trig only
Δt 0.00 ns
4 GS/s
Neg
1 Line ANY
525/60/2:1
STOPPED

CVBS (Video) output error

PIN 10 of CN3 of Jack PCB or CN2 of Main PCB has 1V pk-pk level?

No → Check the DIC1 on MAIN PCB

Yes

Analog signals are Inputted normally VIC1[pin4]

No → Check the connection between 10Pin in CN3 Of JACK PCB and VIC1

Yes

Power is Normal(5v) at VIC1[pin1]?

No → Check the connection between VIC1[pin1] and Power line (VL6, PPIF1).

Yes

Pin5 in VIC1 is In high state?

No → Check the connection between VIC1(PIN5) and IC601(PIN89). Check VIC1 peripheral circuit.

Yes

IF Recorder is under PSO (progressive scan output) MODE, it does not output the CVBS& S-Video signal.

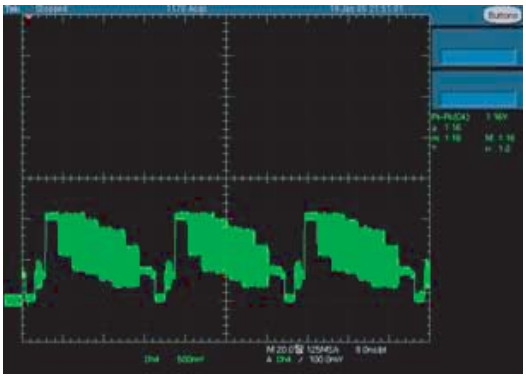
Video signal of About P-P1V appears at Output Jack?

No → Check the connection between VIC1 and output jack.

Yes

Check the RCA Cable

CVBS(Color-bar)



S-Video output error

Pin10 and Pin8 in CN3 of Jack PCB or CN2 of Main PCB has * normal level?

No → Check the DIC1 on MAIN PCB

Yes

Analog signals are Inputted normally VIC1(pin4,2)

No → Check the connection between Pin10 and Pin8 in CN3 Of JACK PCB and VIC1

Yes

Power is Normal(5v) at VIC1(pin1)?

No → Check the connection between VIC1[pin1] and Power line (VL6, PPIF1).

Yes

IF Recorder is under PSO (progressive scan output) MODE, it does not output the CVBS& S-Video signal.

Pin5 in VIC1 is In high state?

No → Check the connection between VIC1(PIN5) and IC601(PIN89). Check VIC1 peripheral circuit.

Yes

Nomal level
: pin 10 is 1Vpk-pk
pin 8 is 0.28V on color burst

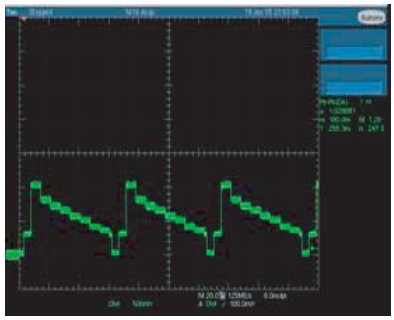
Video signal of About P-P1V appears at Output Jack?

No → Check the connection between VIC1 and output jack.

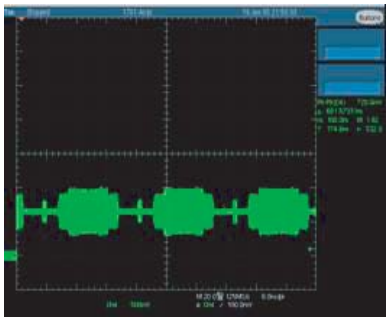
Yes

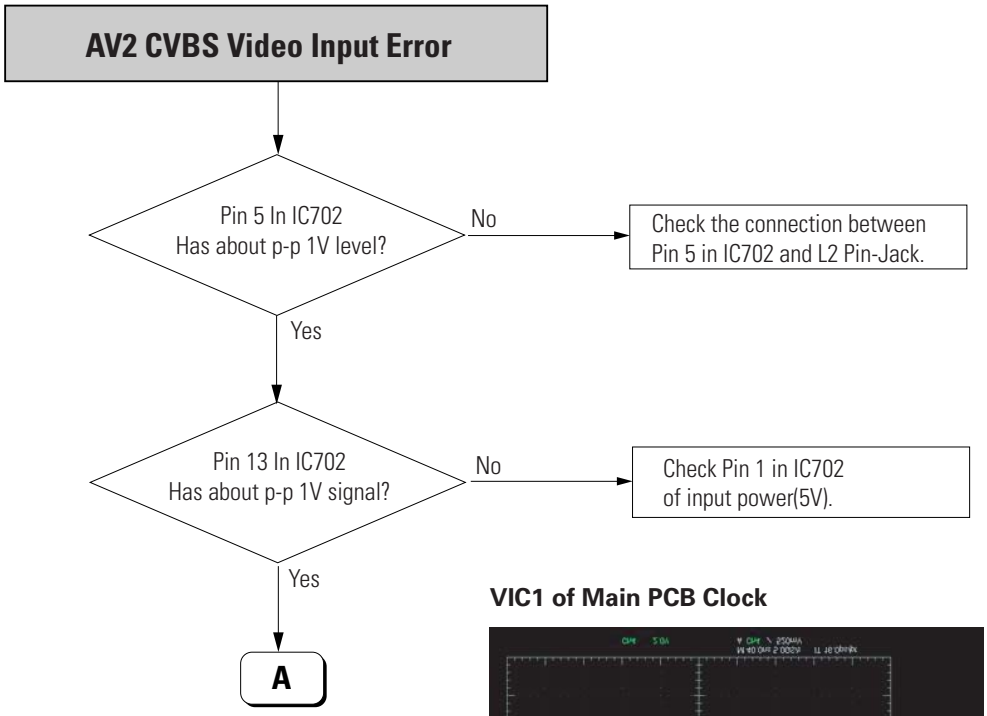
Check the RCA cable

Y(Color-bar)

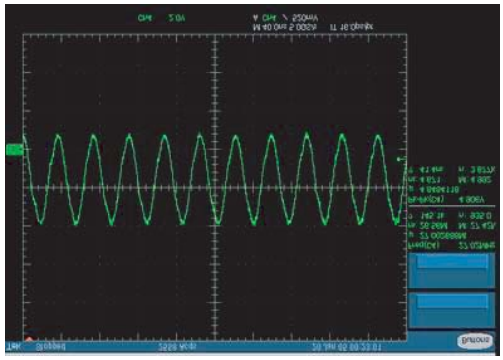


C(Color-bar)

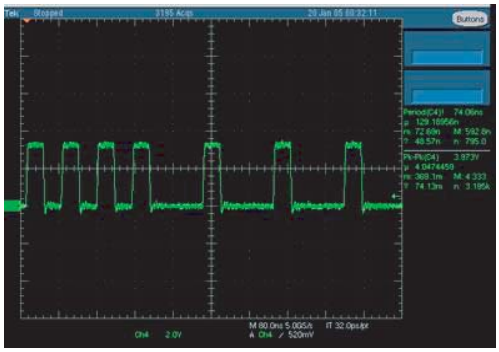




VIC1 of Main PCB Clock



VIC1 of Main PCB DATA



AV1 CVBS Video Input Error

Pin 3 In IC702
Has about p-p 1V level?

No → Check the connection between Pin 3 in IC702 and L1 Pin-Jack.

Yes

Pin 7 In IC702
Has about p-p 1V signal?

No → Check Pin 7 in IC702 of input power(5V).

Yes

A

Pin 2 / 4 in IC702 is
In Low and high state
Respectively?

No → Check the connection between Pin 2 and Pin 4 in IC702 and Pin 92 and 91 in IC601.

Pin9/10
L/L : RF Signal
L/H : Line1
H/L : Line2
H/H : Reserved

Yes

Pin80 in VIC1 of Main PCB
has about p-p 1V level?

No → Check the connection between Pin 80 in VIC1 of Main PCB and Pin 7 in IC702.

Yes

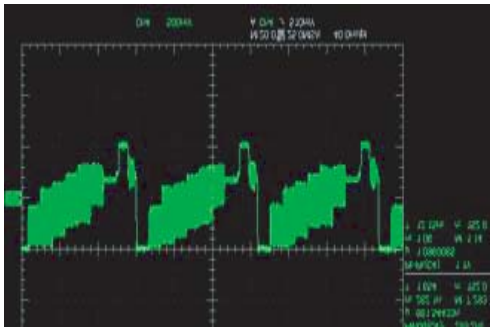
Pin40 and pin 54~43 in VIC1
of Main PCB has Clock and
Digital Video Signal
normal form ?

No → Check VIC1 of Main PCB peripheral circuit. .

Yes

Change Main PCB

CVBS(Color-bar)



AV1 S-Video Video Input Error

Pin 36 and 42 in VIC1 of Main PCB has *normal level?

No → Check the connection between Pin 36 and 42 in VIC1 of Main PCB and L1 S-Video Jack.

Yes

Nomal level
: pin 35 is 1Vpk-pk
pin 42 is 0.28V on color burst

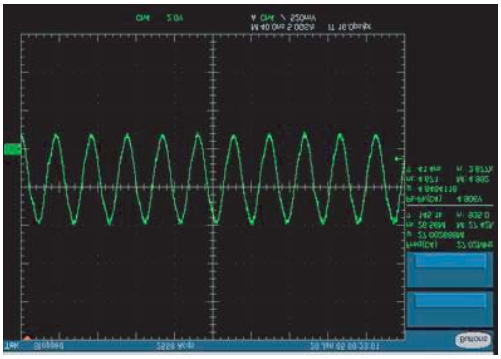
Pin40 and pin 54~43 in VIC1 of Main PCB has Clock and Digital Video Signal normal form ?

No → Check VIC1 of Main PCB peripheral circuit.

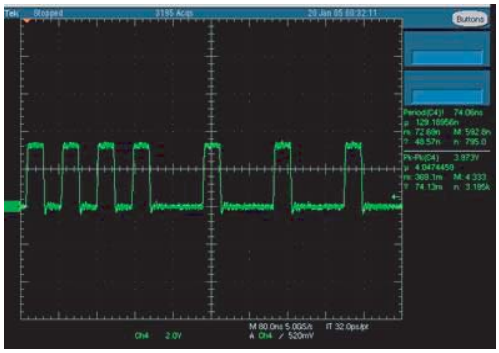
Yes

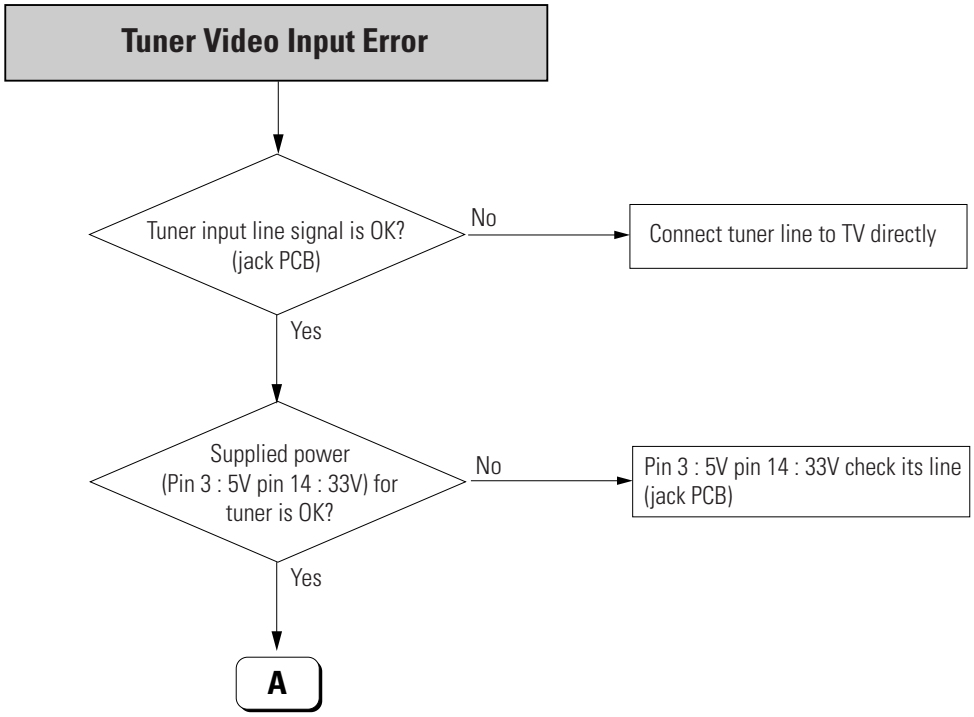
Change Main PCB

VIC1 of Main PCB Clock



VIC1 of Main PCB DATA




Tuner Video Input Error
Tuner input line signal is OK? (jack PCB)
No
Connect tuner line to TV directly
Yes
Supplied power (Pin 3 : 5V pin 14 : 33V) for tuner is OK?
No
Pin 3 : 5V pin 14 : 33V check its line (jack PCB)
Yes
A

Component output error

Pin2/4/6 in CN3 of Jack PCB or CN2 of Main PCB has * normal level?
- No → Check the DIC1 on MAIN B/D.
- Yes ↓

Analog signals are Inputted normally VIC1(pin6/8/9)
- No → Check the connection between Pin2/4/6 in CN3 Of JACK PCB and VIC1(pin6/8/9)
- Yes ↓

Power is Normal(5v) at VIC1(pin1)?
- No → Check the connection between VIC1[pin1] and Power line (VL6, PPIF1).
- Yes ↓

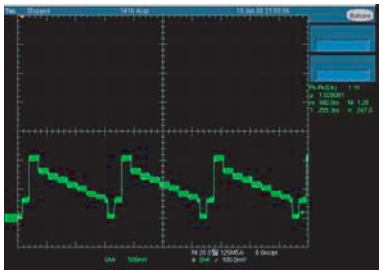
Pin13 in VIC1 is In high state?
- No → Check the connection between VIC1(PIN3) and IC601(PIN89). Check VIC1 peripheral circuit.
- Yes ↓

Video signal of About 1V pk-pk appears at Output Jack?
- No → Check the connection between VIC1 and output jack.
- Yes ↓

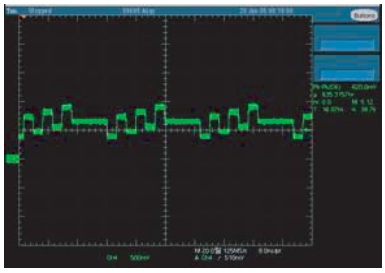
Check the RCA cable

Nomal level
: pin 6 is 1Vpk-pk
pin 2/4 is ± 0.35V

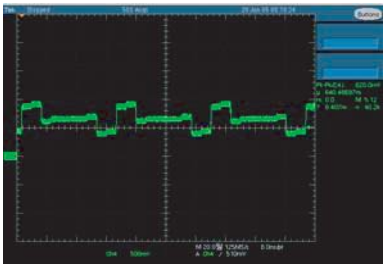
Y(Color-bar)



Pb(Color-bar)



Pr(Color-bar)



Audio Input is not Recording

Check the select signal pin9,10 of IC203(JACK PCB)
- No → Check pin 90,91(5V) of the Front Micom IC601 (JACK PCB)
- Yes ↓

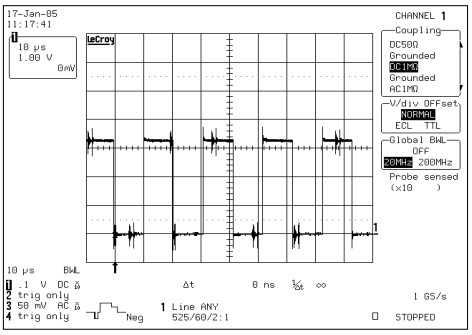
Check all the 12Vcc pin 16 of IC203 and 12Vcc of CN10 AIC4(JACK).
- No → Check SMPS
- Yes ↓

Check the 3.3V pin14 and 5V pin5 of AU5 (MAIN PCB)
- No → Replace Main PCB
- Yes ↓

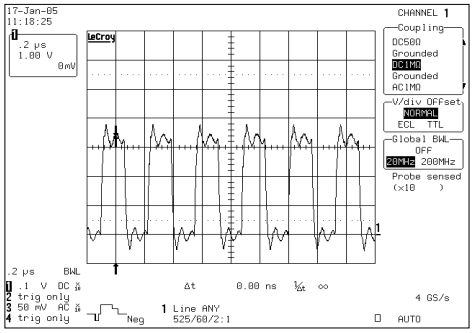
Check Digital clock and data pin 10, 11, 12, 15 of AU5(MAIN PCB)
- No → Replace Main PCB
- Yes ↓

Check the passive parts around jack pin.

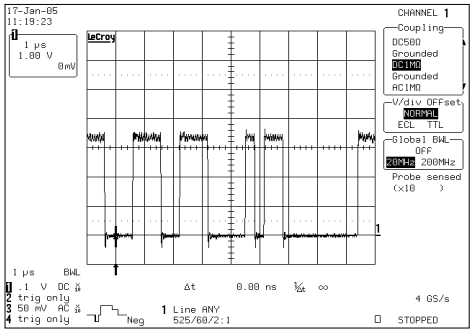
Digital clock(10)



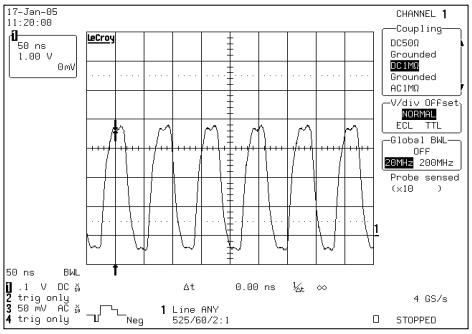
Digital clock(11)

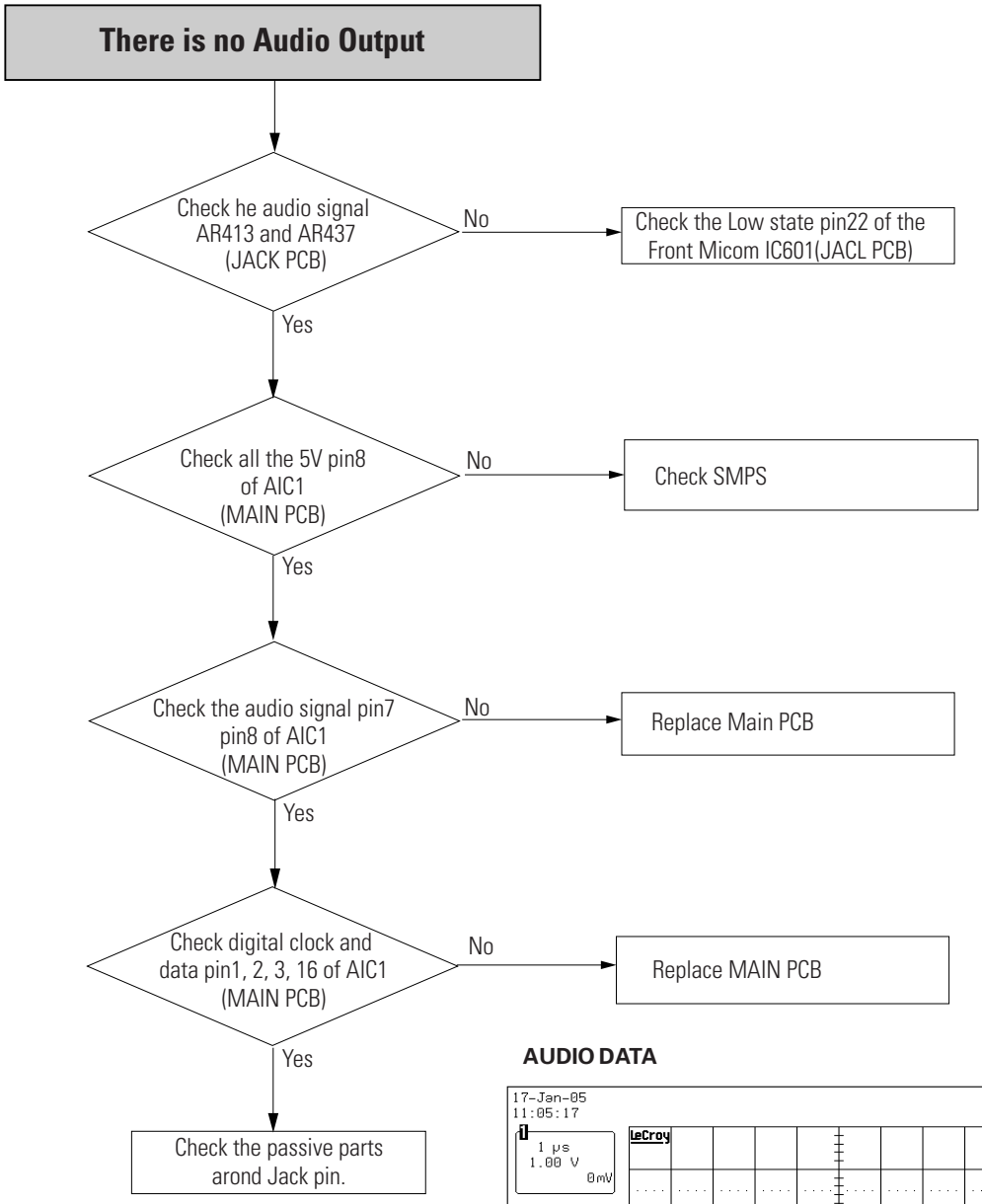


Digital clock(12)

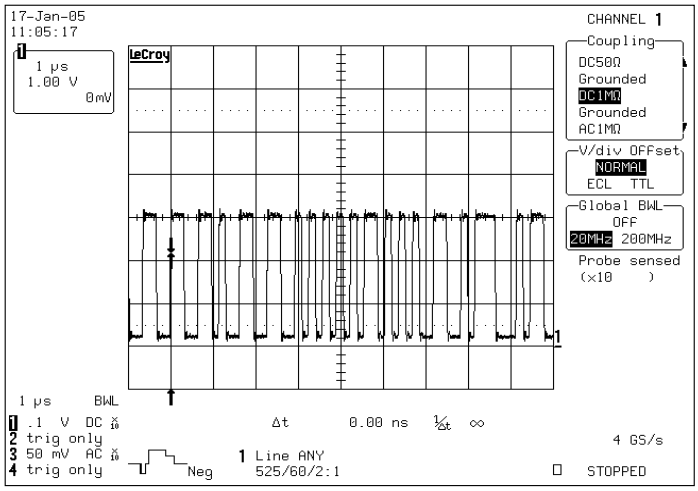


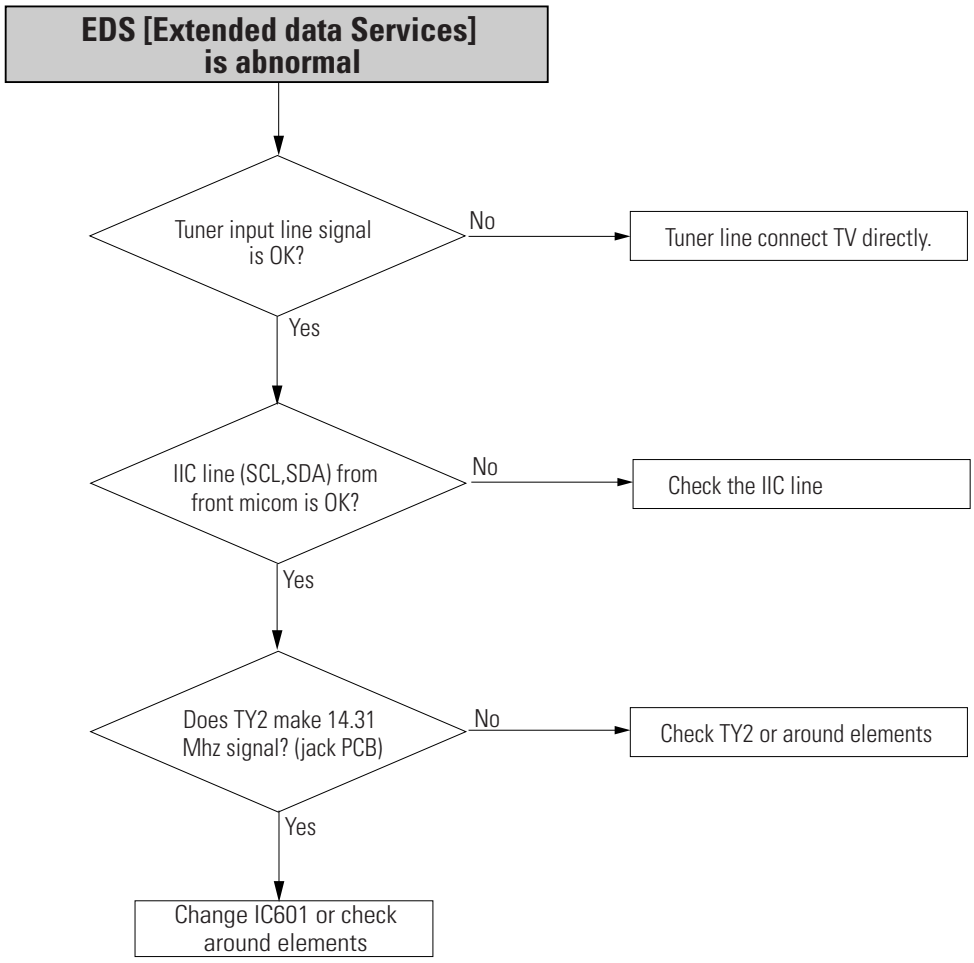
Digital clock(15)

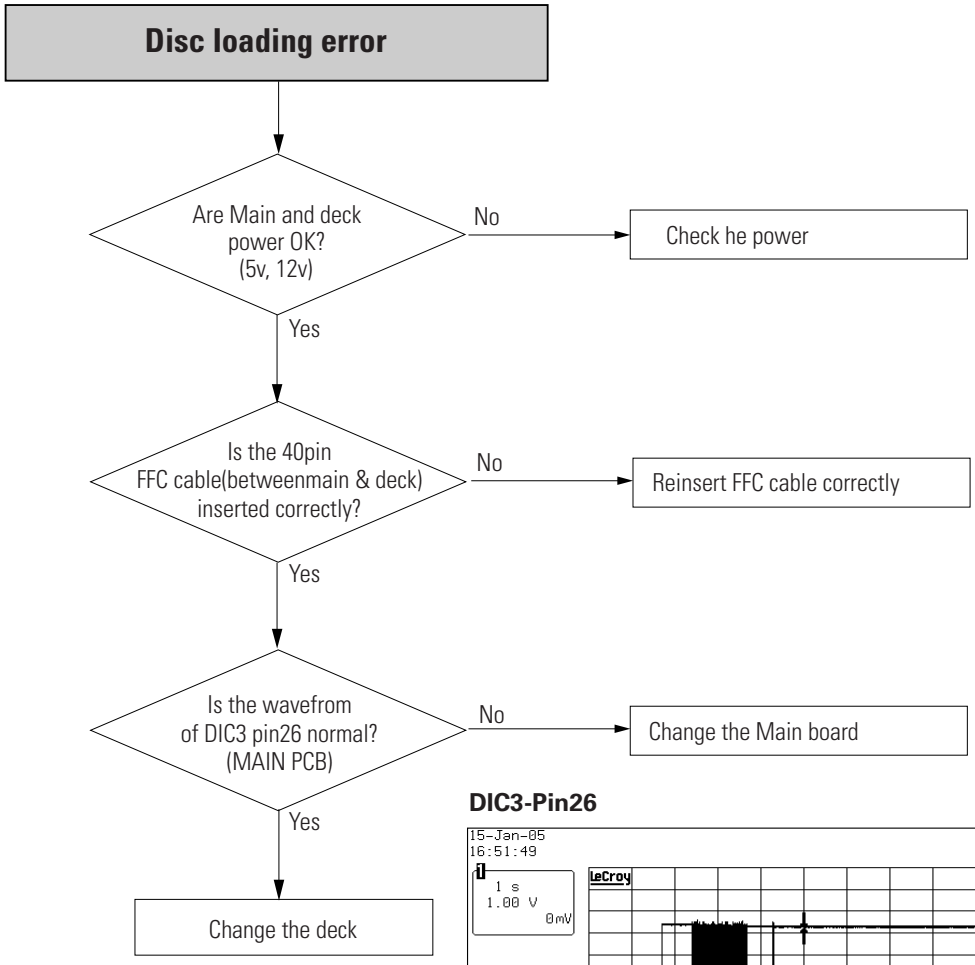



There is no Audio Output
Check he audio signal AR413 and AR437 (JACK PCB)
No
Check the Low state pin22 of the Front Micom IC601(JACL PCB)
Yes
Check all the 5V pin8 of AIC1 (MAIN PCB)
No
Check SMPS
Yes
Check the audio signal pin7 pin8 of AIC1 (MAIN PCB)
No
Replace Main PCB
Yes
Check digital clock and data pin1, 2, 3, 16 of AIC1 (MAIN PCB)
No
Replace MAIN PCB
Yes
Check the passive parts arond Jack pin.

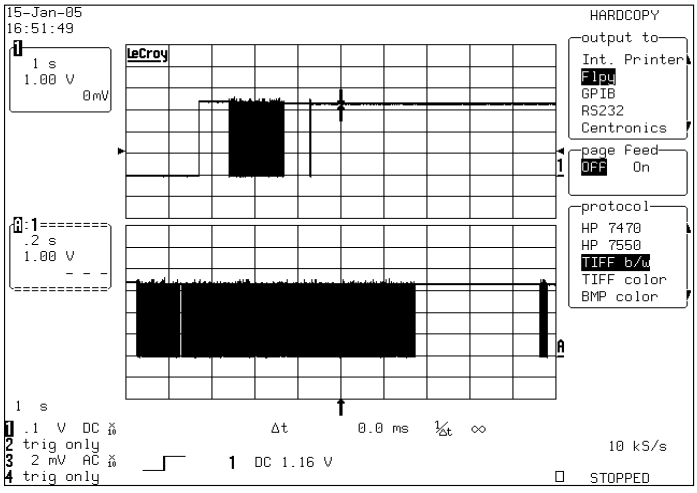
AUDIO DATA

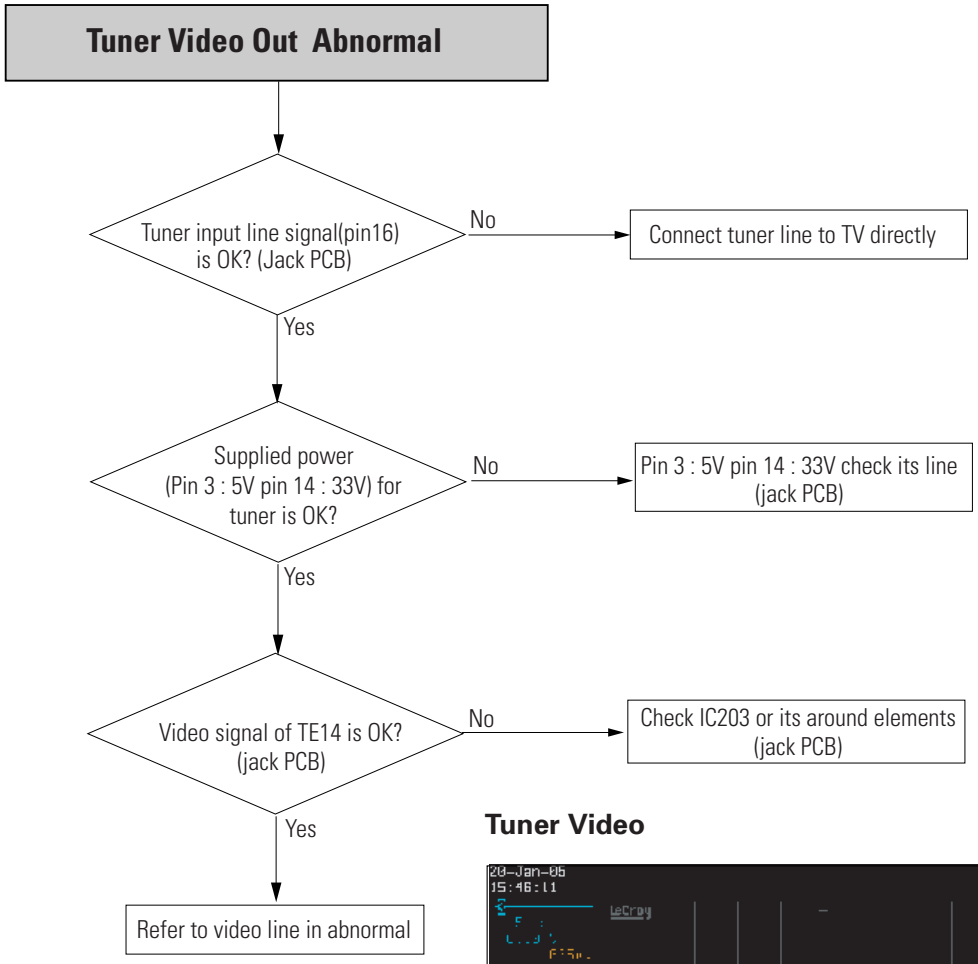

17-Jan-05
11:05:17
CHANNEL 1
Coupling
DC50Ω
Grounded
DC1MΩ
Grounded
AC1MΩ
V/div OFFset
NORMAL
ECL TTL
Global BWL
OFF
20MHz 200MHz
Probe sensed
(×10)
1 µs
1.00 V
0mV
LeCroy
1 µs BWL
1 .1 V DC
2 trig only
3 50 mV AC
4 trig only
Δt 0.00 ns
Neg
1 Line ANY
525/60/2:1
4 GS/s
STOPPED


EDS [Extended data Services] is abnormal
Tuner input line signal is OK?
No
Tuner line connect TV directly.
Yes
IIC line (SCL,SDA) from front micom is OK?
No
Check the IIC line
Yes
Does TY2 make 14.31 Mhz signal? (jack PCB)
No
Check TY2 or around elements
Yes
Change IC601 or check around elements

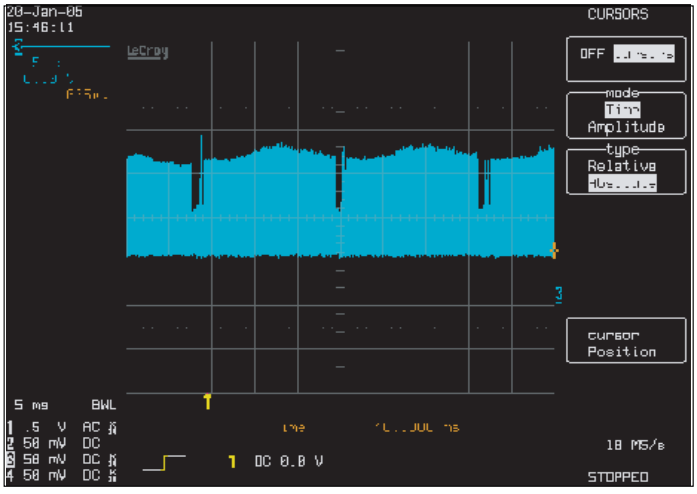

Disc loading error
Are Main and deck power OK? (5v, 12v)
No
Check he power
Yes
Is the 40pin FFC cable(betweenmain & deck) inserted correctly?
No
Reinsert FFC cable correctly
Yes
Is the wavefrom of DIC3 pin26 normal? (MAIN PCB)
No
Change the Main board
Yes
Change the deck

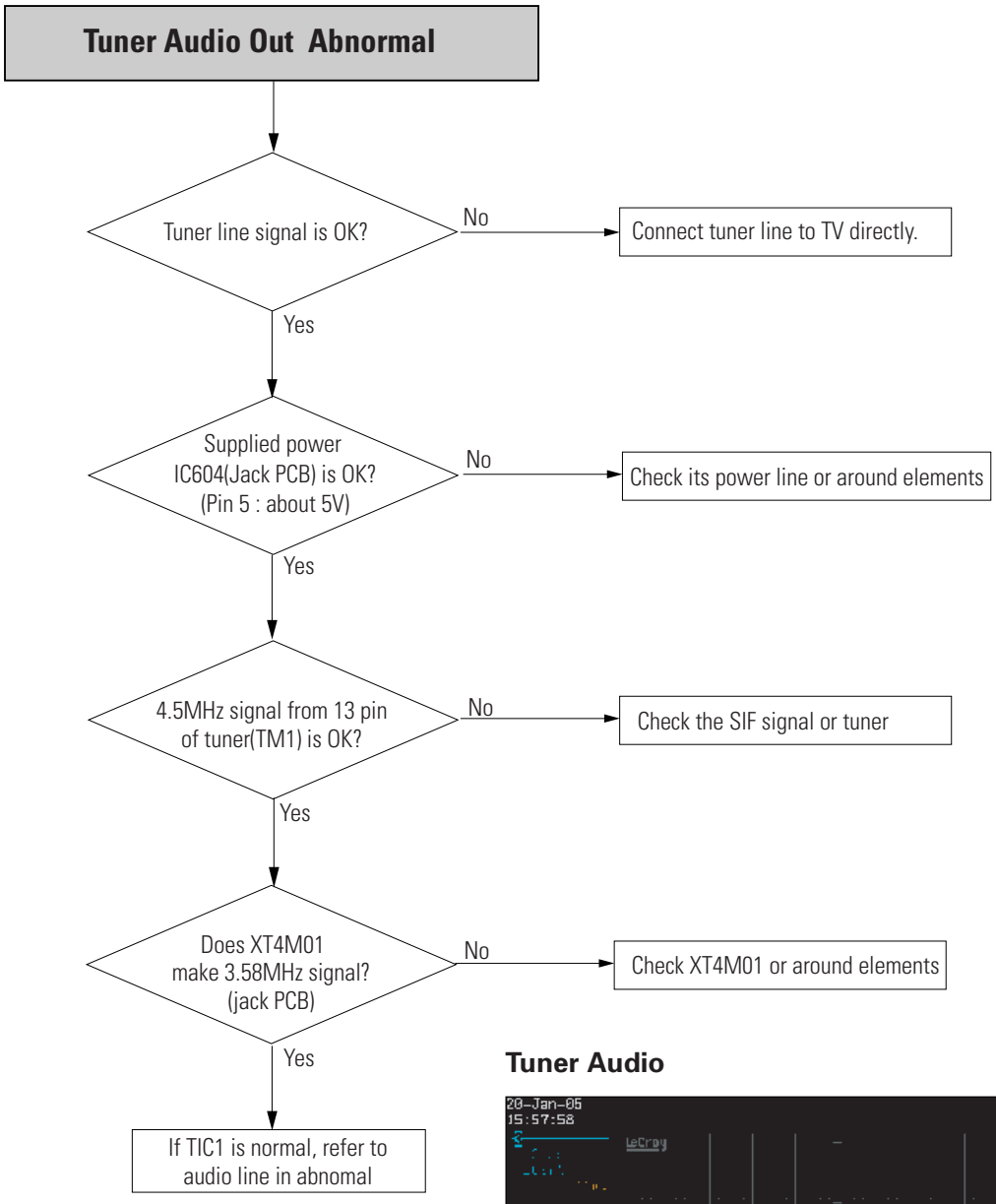
DIC3-Pin26


15-Jan-05
16:51:49
HARDCOPY
output to
Int. Printer
Flpy
GPIB
RS232
Centronics
page Feed
OFF On
protocol
HP 7470
HP 7550
TIFF b/w
TIFF color
BMP color
LeCroy
1 s
1.00 V
0mV
.2 s
1.00 V
1 s
.1 V DC
trig only
2 mV AC
trig only
Δt
0.0 ms
∞
10 kS/s
DC 1.16 V
STOPPED

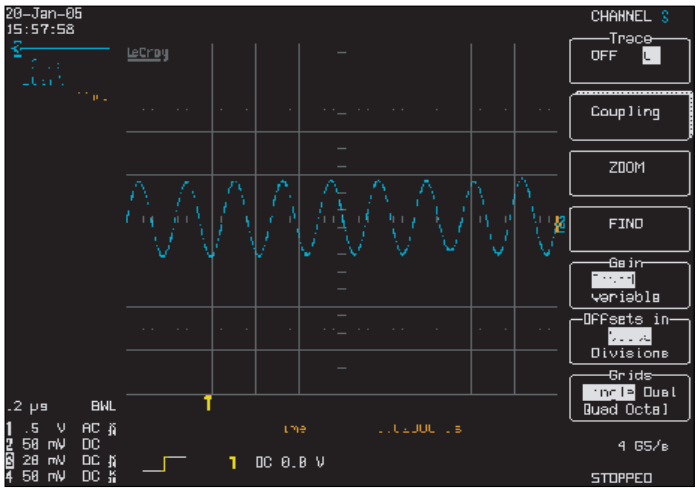

Tuner Video Out Abnormal
Tuner input line signal(pin16) is OK? (Jack PCB)
No
Connect tuner line to TV directly
Yes
Supplied power (Pin 3 : 5V pin 14 : 33V) for tuner is OK?
No
Pin 3 : 5V pin 14 : 33V check its line (jack PCB)
Yes
Video signal of TE14 is OK? (jack PCB)
No
Check IC203 or its around elements (jack PCB)
Yes
Refer to video line in abnormal

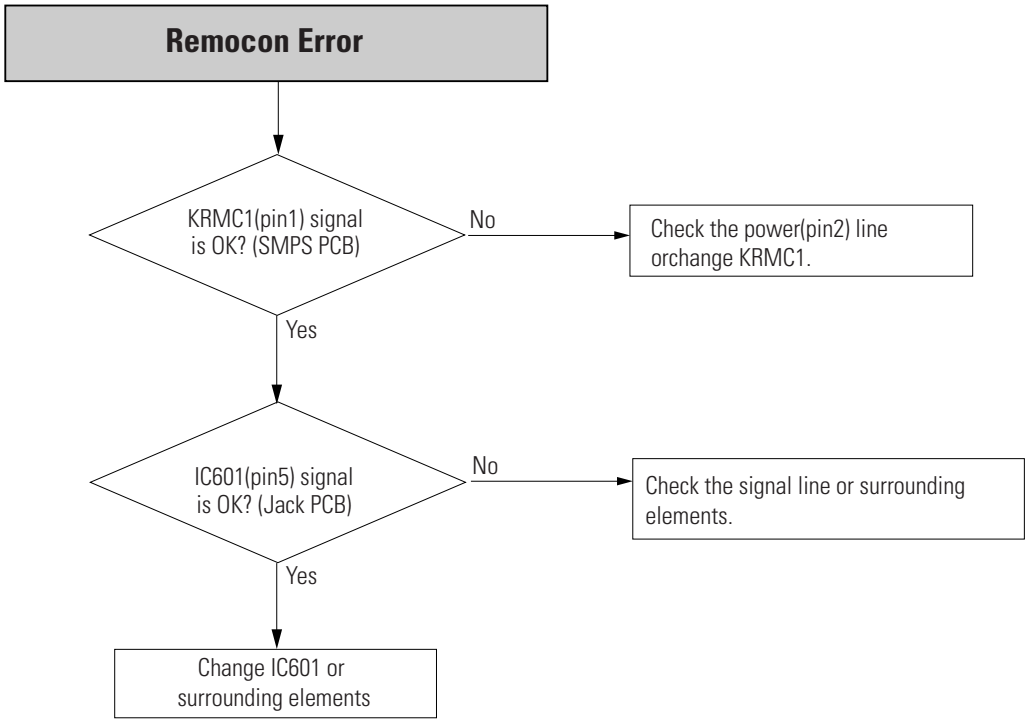
Tuner Video


20-Jan-05
15:46:11
LeCroy
CURSORS
OFF
mode
Time
Amplitude
type
Relative
cursor
Position
5 ms
BWL
1 .5 V AC
2 50 mV DC
3 50 mV DC
4 50 mV DC
1 DC 0.0 V
18 MS/s
STOPPED


Tuner Audio Out Abnormal
Tuner line signal is OK?
No
Connect tuner line to TV directly.
Yes
Supplied power IC604(Jack PCB) is OK? (Pin 5 : about 5V)
No
Check its power line or around elements
Yes
4.5MHz signal from 13 pin of tuner(TM1) is OK?
No
Check the SIF signal or tuner
Yes
Does XT4M01 make 3.58MHz signal? (jack PCB)
No
Check XT4M01 or around elements
Yes
If TIC1 is normal, refer to audio line in abnomal

Tuner Audio


20-Jan-05
15:57:58
LeCroy
CHANNEL 3
Trace
OFF
Coupling
ZOOM
FIND
Gain
variable
Offsets in
Divisions
Grids
Dual
Quad Octal
.2 µs
BWL
1 .5 V AC
2 50 mV DC
3 20 mV DC
4 50 mV DC
1 DC 0.0 V
4 GS/s
STOPPED

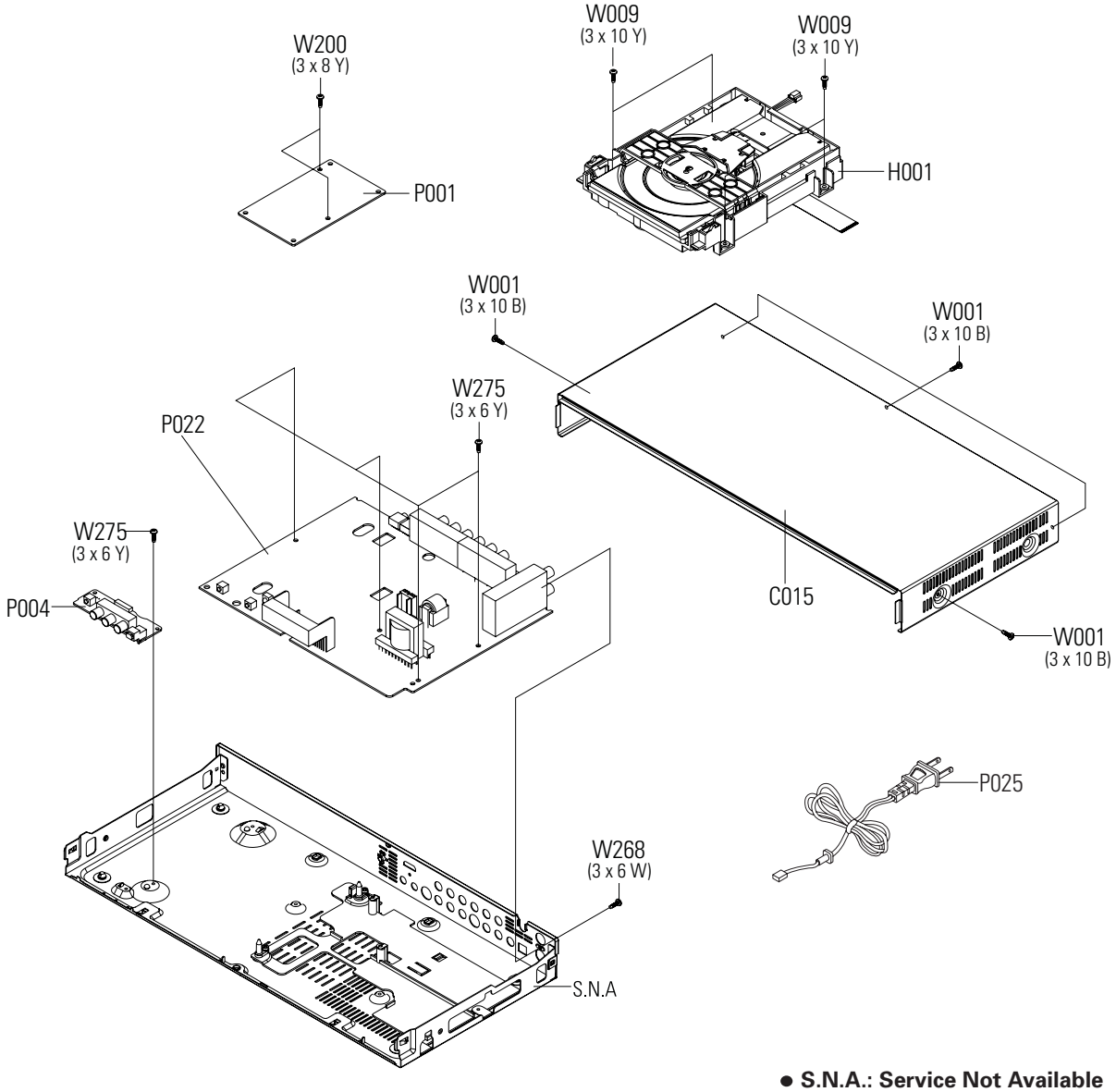

Remocon Error
KRMC1(pin1) signal is OK? (SMPS PCB)
No
Check the power(pin2) line orchange KRMC1.
Yes
IC601(pin5) signal is OK? (Jack PCB)
No
Check the signal line or surrounding elements.
Yes
Change IC601 or surrounding elements

6. Exploded View and Parts List

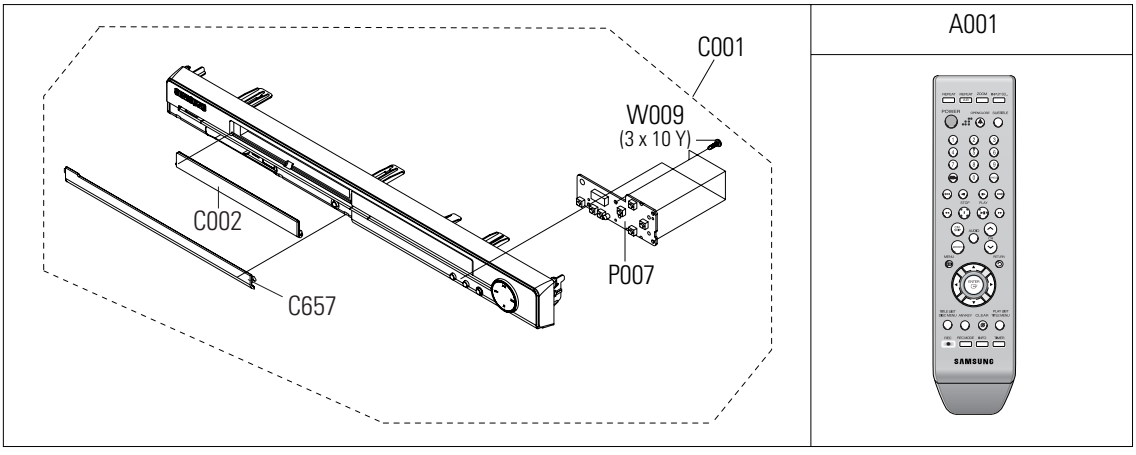
Page

6-1 Cabinet Assembly - - -

6-1 Cabinet Assembly



● **S.N.A.: Service Not Available**



Loc. No	Parts No.	Description ; Specification	Q ty	S.N.A	Remark
A001	AK59-00055A	REMOCON-ASSY;DVD-R130/XAA,SEC,197.5*48*2	1	SA	
C001	AK97-01447A	ASSY-CABINET FRONT;HIPS 94HB,DVD-R130,XA	1	SA	
C002	AK64-01432A	DOOR-TRAY;DVD-R130,ABS 94HB,T2,H15,W150,	1	SA	
C015	AK64-01444A	CABINET-TOP;DVD-R130,PCM,T0.6,W430,L195,	1	SA	
C657	AK64-01433A	DOOR-JACK;DVD-R130,ABS 94HB,T2,H20,W200,	1	SA	
H001	AK97-01553A	ASSY-LOADER;-,SV-R3600,LOADER ASSY	1	SA	
P001	AK92-00872A	ASSY PCB-MAIN;DVD-R130/XAA,MAIN PCB ASSY	1	SA	
P004	AK97-01530A	ASSY PCB-KEY PCB;SV-R3600,ANDES	1	SA	
P007	AK92-00891A	ASSY PCB-KEY;DVD-R130/XAA,KEY PCB ASSY	1	SA	
P022	AK92-00873A	ASSY PCB-JACK;DVD-R130/XAA,JACK PCB ASSY	1	SA	
P025	AH39-10061A	CBF-POWER CORD;KJ-10W,EP2,AWG2/18,1.83M,	1	SA	
W001	6003-000275	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(BLK),S	5	SA	
W009	6003-000276	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(YEL),S	8	SA	
W200	6003-001375	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	2	SA	
W268	6003-000254	SCREW-TAPTITE;BH,+,-,S,M3,L6,ZPC(WHT),SW	1	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,-,B,M3,L6,ZPC(YEL),SW	5	SA	

MEMO

7. Electrical Parts List

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
P001	**AK92-00872A**	**ASSY PCB-MAIN;DVD-R130/XAA,MAIN PCB ASSY**	**1**	**SA**	
AC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC18	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AIC1	1002-001395	IC-D/A CONVERTER;PCM1753,24Bit,SSOP,16P,	1	SA	
AIC2	1002-001459	IC-A/D CONVERTER;PCM1803A,24BIT,SSOP,20P	1	SA	
AL1	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
AL2	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
AR1	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
AR11	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
AR13	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR2	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
AR3	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
AR4	2011-000515	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,TP,	1	SA	
ATC1	2402-001217	C-AL,SMD;220UF,20%,16V,WT,TP,6.6X6.6X7.	1	SA	
ATC2	2402-000204	C-AL,SMD;10UF,20%,16V,WT,TP,4.3X4.3X5.4	1	SA	
ATC3	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
ATC5	2402-000007	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	1	SA	
ATC6	2402-000204	C-AL,SMD;10UF,20%,16V,WT,TP,4.3X4.3X5.4	1	SA	
C1	2203-000384	C-CER,CHIP;0.015nF,5%,50V,C0G,1608	1	SA	
C10	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C100	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C101	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C102	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C103	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C104	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C106	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C107	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C108	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C109	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C110	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C112	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C113	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C114	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C116	2203-001683	C-CER,CHIP;0.068nF,5%,50V,NP0,1608	1	SA	
C117	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C119	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C121	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C122	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
C13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C14	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C16	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C17	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C18	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C19	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C2	2203-000426	C-CER,CHIP;0.018nF,5%,50V,C0G,1608	1	SA	
C20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C21	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C22	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	1	SA	
C23	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	1	SA	
C24	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C25	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	1	SA	
C26	2203-001554	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	1	SA	
C27	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C28	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C29	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C3	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C30	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C31	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C32	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C33	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C34	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C35	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C36	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C37	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C38	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C39	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C41	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C42	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C43	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C44	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C46	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C48	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C49	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C50	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C51	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C52	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C53	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C54	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C55	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C64	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	1	SA	
C65	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C66	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C67	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C68	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	1	SA	
C69	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C70	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C71	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C74	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	1	SA	
C75	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C76	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C77	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C78	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
C79	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C80	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C81	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	1	SA	
C82	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C83	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C84	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C85	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C86	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C87	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C89	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C90	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C91	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C92	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C93	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	1	SA	
C94	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C95	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608	1	SA	
C96	2203-000851	C-CER,CHIP;0.039NF,5%,50V,C0G,TP,1608	1	SA	
C97	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C99	2203-000851	C-CER,CHIP;0.039NF,5%,50V,C0G,TP,1608	1	SA	
CE1	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
CE3	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
CE4	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
CN5	3708-001935	CONNECTOR-FPC/FFC/PIC;40P,0.5mm,SMD-S,AU	1	SA	
CON1	3710-002075	CONNECTOR-SOCKET;30P,2R,2MM,SMD,SnPb,BLK	1	SA	
CON2	3710-002075	CONNECTOR-SOCKET;30P,2R,2MM,SMD,SnPb,BLK	1	SA	
DIC1	1205-002704	IC-CODEC;S5L3200,BGA,292P,27x27mm,PLAST	1	SA	
DIC2	1105-001563	IC-DRAM;HYB25D256160CE-6,16Mx16Bit,TSO	1	SNA	
DIC3	1107-001242	IC-FLASH MEMORY;39VF160,1Mx16,TSOP,48P,1	1	SNA	
DIC4	0801-002624	IC-CMOS LOGIC;74LVC16374A,16BIT D FLIP-F	1	SA	
DIC5	0801-002624	IC-CMOS LOGIC;74LVC16374A,16BIT D FLIP-F	1	SA	
DIC6	1103-001134	IC-EEPROM;24C040,512x8,SOP,8P,5.13x3.95m	1	SA	
DIC7	0801-002701	IC-CMOS LOGIC;74VHCT125A,BUFFER,TSSOP,14	1	SA	
DIC9	0801-002166	IC-CMOS LOGIC;7SHU04,INVERTER,SSOP,5P,63	1	SA	
FIC1	1205-001988	IC-DATA COMM./GEN.;TSB41AB1-PAP,QFP,64P,	1	SA	
R10	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R102	2007-001014	R-CHIP;51OHM,5%,1/10W,TP,1608	1	SA	
R103	2007-001014	R-CHIP;51OHM,5%,1/10W,TP,1608	1	SA	
R104	2007-001014	R-CHIP;51OHM,5%,1/10W,TP,1608	1	SA	
R105	2007-001014	R-CHIP;51OHM,5%,1/10W,TP,1608	1	SA	
R11	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R113	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R118	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R119	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
R12	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R122	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
R123	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
R124	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
R125	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	1	SA	
R13	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R14	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R15	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R16	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R17	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R18	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R19	2007-000763	R-CHIP;330ohm,1%,1/10W,TP,1608	1	SA	
R2	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R20	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R21	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R29	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R3	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SA	
R33	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R34	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R35	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R36	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R37	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R38	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R39	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	1	SA	
R40	2007-000086	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	1	SA	
R41	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
R43	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R45	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
R46	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R50	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R51	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
R52	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R53	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
R54	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	1	SA	
R55	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
R56	2007-001056	R-CHIP;6.2Kohm,5%,1/10W,TP,1608	1	SA	
R58	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
R59	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R6	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R60	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	1	SA	
R61	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R66	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R7	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R71	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SA	
R72	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R73	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R8	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R88	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R89	3301-001309	BEAD-SMD;47ohm,1608,TP,-,-	1	SA	
R90	3301-001309	BEAD-SMD;47ohm,1608,TP,-,-	1	SA	
RIC1	1203-003996	IC-POSI.FIXED REG.;KIA78R025F,DPAK,5P,6.	1	SA	
RIC2	1203-003806	IC-POSI.ADJUST REG.;KIA78R000,DPAK,5P,6.	1	SA	
RP1	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP10	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP12	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP2	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP20	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP21	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP22	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP23	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP24	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP25	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP26	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP27	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP28	2011-001194	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
RP3	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP30	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP31	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP42	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,32	1	SA	
RP43	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,32	1	SA	
RP44	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,32	1	SA	
RP45	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,32	1	SA	
RP5	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP6	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
RP8	2011-000585	R-NET;47ohm,5%,1/16W,L,CHIP,8P,TP,3.	1	SA	
TC1	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
TC14	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
TC16	2402-001238	C-AL,SMD;1uF,20%,50V,HR,TP,4.3x4.3x5.2m	1	SA	
TC3	2402-001086	C-AL,SMD;100UF,20%,16V,WT,TP,6.6X6.6X5.	1	SA	
TC5	2402-001086	C-AL,SMD;100UF,20%,16V,WT,TP,6.6X6.6X5.	1	SA	
TC6	2402-001086	C-AL,SMD;100UF,20%,16V,WT,TP,6.6X6.6X5.	1	SA	
TC7	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
TC9	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
VC1	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC11	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC13	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC15	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC16	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC17	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC18	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC2	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC21	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC23	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC24	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC25	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC26	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC27	2203-000280	C-CER,CHIP;0.01nF,0.5pF,50V,C0G,1608	1	SA	
VC28	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC29	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC5	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC7	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC8	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC9	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VIC1	1204-002419	IC-VIDEO DECODER;TW9906,TQFP,80P,12x12mm	1	SA	
VL1	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	SA	
VR1	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VR14	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VR15	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	1	SA	
VR16	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	1	SA	
VR2	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VR23	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
VR4	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VR8	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
VRP1	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,32	1	SA	
VRP2	2011-000002	R-NET;22ohm,5%,1/16W,L,CHIP,8P,TP,32	1	SA	
VRP3	2011-000816	R-NET;100OHM,5%,1/16W,L,CHIP,8P,TP	1	SA	
VRP4	2011-000816	R-NET;100OHM,5%,1/16W,L,CHIP,8P,TP	1	SA	
VTC3	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
VTC4	2402-001059	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	1	SA	
Y1	2801-004095	CRYSTAL-SMD;27MHz,20ppm,28-ABY,14pF,30oh	1	SA	
Y2	2801-004021	CRYSTAL-SMD;24.576MHz,20ppm,28-AAN,12pF,	1	SA	
P004	**AK97-01530A**	**ASSY PCB-KEY PCB;SV-R3600,ANDES**	**1**	**SA**	
CN704	3708-001803	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,ANGLE,T	1	SA	
FL286	3809-001667	FFC CABLE-FLAT;30V,80C,70mm,10P,1.25mm,U	1	SA	
SW703	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW705	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW706	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW707	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW708	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW709	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
SW710	3404-001182	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	1	SA	
P007	**AK92-00891A**	**ASSY PCB-KEY;DVD-R130/XAA,KEY PCB ASSY**	**1**	**SA**	
ESD01	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD02	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD03	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD04	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD05	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD06	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD07	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
ESD08	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
AR722	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
AR740	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
AR702	2001-000591	R-CARBON;3.3KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
AR715	2001-000591	R-CARBON;3.3KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
VR40	2001-000969	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R720	2007-000098	R-CHIP;56Kohm,5%,1/10W,TP,1608	1	SA	
SW711	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
FCON4	3708-001695	CONNECTOR-FPC/FFC/PIC;13P,1MM,STRAIGHT,S	1	SA	
CN7	3722-002383	JACK-IEEE1394;4P/1,AU,BLK,ANGLE,IEEE1394	1	SA	
AVIN2	3722-002384	JACK-PIN;3P,SN/NI,YEL/WHT/RED,ANGLE	1	SA	
P022	**AK92-00873A**	**ASSY PCB-JACK;DVD-R130/XAA,JACK PCB ASSY**	**1**	**SA**	
AC16	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
AC17	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
AC405	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC406	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC407	2203-000125	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	1	SA	
AC408	2203-000125	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	1	SA	
AC409	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
AC410	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
AC413	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AC702	2203-000783	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	1	SA	
AC705	2203-000783	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	1	SA	
AC714	2203-000783	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	1	SA	
AC715	2203-000783	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	1	SA	
ACC2	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
ACC3	2203-000315	C-CER,CHIP;0.12nF,5%,50V,C0G,1608	1	SA	
AD1	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD2	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AD3	0407-000123	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	1	SA	
AE404	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
AE405	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
AE41	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
AE412	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
AE42	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	1	SA	
AE46	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	1	SA	
AE47	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
AE701	2401-000922	C-AL;22uF,20%,16V,GP,TP,5x5,5	1	SA	
AE702	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	1	SA	
AE703	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
AE704	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
AE705	2401-000922	C-AL;22uF,20%,16V,GP,TP,5x5,5	1	SA	
AE712	2401-000922	C-AL;22uF,20%,16V,GP,TP,5x5,5	1	SA	
AE714	2401-000922	C-AL;22uF,20%,16V,GP,TP,5x5,5	1	SA	
AE715	2401-000922	C-AL;22uF,20%,16V,GP,TP,5x5,5	1	SA	
AIC4	1201-000163	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	1	SA	
AMC01	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
AME01	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
AQ1	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ3	0501-000341	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	1	SA	
AQ4	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ5	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ51	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ52	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AQ6	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	1	SA	
AQ7	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	1	SA	
AR26	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR301	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR302	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
AR303	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR4	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
AR40	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
AR403	2007-001010	R-CHIP;51Kohm,5%,1/10W,TP,1608	1	SA	
AR404	2007-001010	R-CHIP;51Kohm,5%,1/10W,TP,1608	1	SA	
AR407	2007-001010	R-CHIP;51Kohm,5%,1/10W,TP,1608	1	SA	
AR408	2001-000837	R-CARBON;51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
AR409	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR410	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
AR411	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR412	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR413	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR414	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR415	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR420	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	1	SA	
AR421	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR460	2007-000122	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	1	SA	
AR461	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR471	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR472	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
AR473	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR474	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
AR475	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
AR5	2001-000290	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
AR705	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA	
AR713	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR714	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA	
AR725	2007-000081	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	1	SA	
AR734	2007-000081	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	1	SA	
AR735	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
AR900	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
AR901	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
ASQ01	0504-000142	TR-DIGITAL;FJN4301R,PNP,300MW,4.7K/4.7K,	1	SA	
ASQ02	0504-000118	TR-DIGITAL;KSR1003,NPN,300MW,22K/22K,TO-	1	SA	
ASQ03	0504-000142	TR-DIGITAL;FJN4301R,PNP,300MW,4.7K/4.7K,	1	SA	
ASQ04	0504-000118	TR-DIGITAL;KSR1003,NPN,300MW,22K/22K,TO-	1	SA	
ASR01	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
ASR02	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
AVJ1	3722-002449	JACK-PIN;6P+VHS,Ni/Sn,RD-BU-GN/RD-WH-YL	1	SA	
AVJ2	3722-002450	JACK-PIN;6P+VHS,Ni/Sn,RD-WH-YL/BL-RD-WH	1	SA	
AVJ5	3707-001070	CONNECTOR-OPTICAL;PLUG,GP1FA550TZ,6dB,2.	1	SA	
BD05	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD06	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD07	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD08	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD21	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD22	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD23	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
BD24	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
C216	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C220	2203-005171	C-CER,CHIP;1000nF,10%,16V,X7R,2012	1	SA	
C222	2203-000062	C-CER,CHIP;47nF,+80-20%,50V,Y5V,1608	1	SA	
C4M17A	2203-000323	C-CER,CHIP;12nF,10%,50V,X7R,TP,2012,-	1	SA	
C4M18A	2203-000357	C-CER,CHIP;0.15nF,5%,50V,C0G,1608	1	SA	
C4M19A	2203-000681	C-CER,CHIP;0.027nF,5%,50V,C0G,1608	1	SA	
C603	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA	
C616	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C617	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
C618	2203-000426	C-CER,CHIP;0.018nF,5%,50V,C0G,1608	1	SA	
C619	2203-000426	C-CER,CHIP;0.018nF,5%,50V,C0G,1608	1	SA	
C620	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA	
C621	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA	
C622	2203-005065	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	1	SA	
C623	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	1	SA	
C626	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C627	2203-001697	C-CER,CHIP;0.082nF,5%,50V,NP0,1608	1	SA	
C628	2401-002069	C-AL;33uF,20%,16V,GP,TP,6.3x5,5	1	SA	
C629	2203-005221	C-CER,CHIP;15nF,10%,50V,X7R,1608	1	SA	
C630	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
C631	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
C635	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
C636	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
C637	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
C647	2203-000681	C-CER,CHIP;0.027nF,5%,50V,C0G,1608	1	SA	
C651	2202-000216	C-CERAMIC,MLC-AXIAL;0.027NF,5%,50V,SL,TP	1	SA	
C652	2203-000681	C-CER,CHIP;0.027nF,5%,50V,C0G,1608	1	SA	
C658	2203-001155	C-CER,CHIP;0.068nF,5%,50V,NP0,TP,1608	1	SA	

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C701	2401-000118	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	1	SA	
C702	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
C703	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
C704	2401-000240	C-AL;100uF,20%,10V,GP,TP,5x11,5	1	SA	
C707	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
C708	2401-000118	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	1	SA	
CVL1	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
CVL2	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
CVL3	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
D702	0401-000101	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	1	SA	
D703	0401-000101	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	1	SA	
D704	0401-000101	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	1	SA	
D705	0401-000101	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	1	SA	
D719	0402-001533	DIODE-RECTIFIER;1N5408,1000V,3A,-,BK	1	SA	
D720	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	1	SA	
DAR01	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
DOC3	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
DOC4	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
DOC5	2203-000998	C-CER,CHIP;0.047nF,5%,50V,C0G,1608	1	SA	
DOE1	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
DOL2	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
DOL3	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	1	SA	
DOR1	2007-000040	R-CHIP;150ohm,1%,1/10W,TP,1608	1	SA	
DOR2	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
DOR3	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
DT701	AK07-00034A	LED DISPLAY-OVAL TYPE;BCD-9032B,DVD-R120	1	SA	
E201	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
E202	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
E205	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
E212	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
E213	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
FC10	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
FC12	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
FCON1	3708-001802	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,STRAIGH	1	SA	
FCON3	3708-001695	CONNECTOR-FPC/FFC/PIC;13P,1MM,STRAIGHT,S	1	SA	
FD2	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	1	SA	
FD3	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	1	SA	
FD4	0401-000101	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	1	SA	
FD7	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	1	SA	
FDJ1	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	1	SA	
FDJ2	0402-000165	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	1	SA	
FE4	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
FIC5	AC14-12006C	IC;KA7533,DIP,-	1	SA	
FL1	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	1	SA	
FL2	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
FL3	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
FL4	2701-000114	INDUCTOR-AXIAL;10UH,10%,2534	1	SA	
FR24	2007-000100	R-CHIP;68Kohm,5%,1/10W,TP,1608	1	SA	
FR25	2007-000503	R-CHIP;2.2ohm,5%,1/10W,TP,1608	1	SA	
IC203	0801-001270	IC-CMOS LOGIC;4052,MUX/DEMUX,SOP,16,150M	1	SA	
IC601	AC09-00614A	IC MICOM;MN101D10G-CB1,DVD-R130/XAA,100	1	SA	
IC603	1103-001134	IC-EEPROM;24C040,512x8,SOP,8P,5.13x3.95m	1	SA	
IC604	1204-002509	IC-SIGNAL PROCESSOR;CXA2207N,SSOP,32P,11	1	SA	
IC701	1003-001561	IC-LED DRIVER;PT6961,SOP,32P,300MIL,-,40	1	SA	
IC702	1001-001056	IC-VIDEO SWITCH;MM1113XF,-,SOP,8P,-,-,5V	1	SA	
JP34	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
JPS07	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
KRMC1	0609-001225	MODULE REMOCON;VERTICAL,3.6mm,TR	1	SA	
L701	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
ME01	2401-003499	C-AL;330uF,20%,16V,LZ,TP,8x11.5mm,5	1	SA	
P022	3711-005563	CONNECTOR-HEADER;BOX,30P,2R,2MM,STRAIGHT	1	SA	
P022	3711-005563	CONNECTOR-HEADER;BOX,30P,2R,2MM,STRAIGHT	1	SA	
PACT1	2301-001792	C-FILM,LEAD;150nF,20%,275V,BK,17.5x7.0x1	1	SA	
PACT2	2301-001792	C-FILM,LEAD;150nF,20%,275V,BK,17.5x7.0x1	1	SA	
PADT1	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	1	SA	
PADT2	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	1	SA	
PADT3	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	1	SA	
PADT4	0402-001111	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	1	SA	
PAFT1	3601-000244	FUSE-CARTRIDGE;250V,2A,SLOW-BLOW,GLASS,5	1	SC	
PALT2	AC29-00002A	FILTER LINE NOISE;-,30mH,-,-,BLF-2116	1	SA	
PART1	2002-000121	R-COMPOSITION;1Mohm,10%,1/2W,AA,TP,3.5x9	1	SA	
PAVV1	1405-000186	VARISTOR;470V,2500A,17.5x7.5mm,TP	1	SA	
PAVV2	1405-001026	VARISTOR;470V,600A,9x7mm,TP	1	SA	
PAWT1	3711-000203	HEADER-BOARD TO CABLE;1WALL,2P/3P,1R,7.9	1	SA	
PBCU1	2201-002044	C-CERAMIC,DISC;0.1NF,10%,400V,Y5P,TP,8.5	1	SA	
PBCU2	2201-002044	C-CERAMIC,DISC;0.1NF,10%,400V,Y5P,TP,8.5	1	SA	
PBCU3	2201-000828	C-CERAMIC,DISC;3.3NF,20%,400V,Y5U,TP,15X	1	SA	
PBCU4	2201-000828	C-CERAMIC,DISC;3.3NF,20%,400V,Y5U,TP,15X	1	SA	
PBIZ1	0604-001028	PHOTO-COUPLER;TR,50-600%,250mW,DIP-4,ST	1	SA	
PDCZ1	2301-001654	C-FILM,LEAD-PEF;1000nF,5%,100V,TP,22.5x1	1	SA	
PFCF1	2301-000129	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10X9X4.3	1	SA	
PFCZ1	2307-000104	C-FILM,LEAD-PCF;10nF,5%,50V,TP,-,5mm	1	SA	
PFID1	AC14-12006D	IC;KA431Z,TO-92,TAPING	1	SA	
PFRF1	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PFRF2	2001-000221	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
PFRF3	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PFRF4	2001-000674	R-CARBON;360OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PFRF5	2004-000459	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	1	SA	
PFRF6	2004-000459	R-METAL;2.2Kohm,1%,1/8W,AA,TP,1.8x3.2m	1	SA	
PFRZ1	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PLCZ1	2301-000129	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10X9X4.3	1	SA	
PLRU1	1404-001361	THERMISTOR-NTC;3ohm,4A,-,35mW/C,-,9,TP	1	SA	
PLRZ1	2003-000105	R-METAL OXIDE;0.33ohm,5%,2W,AD,TP,6x16mm	1	SA	
PPCD1	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	1	SA	
PPCD2	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
PPCF1	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	1	SA	
PPCF2	2401-003480	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	1	SA	
PPCF3	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
PPCF4	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
PPCF5	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
PPCF6	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
PPCF7	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
PPCF8	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
PPCF9	2401-001502	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	1	SA	
PPCI1	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	1	SA	
PPCI2	2401-001126	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	1	SA	
PPCI3	2401-003499	C-AL;330uF,20%,16V,LZ,TP,8x11.5mm,5	1	SA	
PPCO1	2401-000385	C-AL;10uF,20%,100V,GP,TP,6.3x11,5	1	SC	
PPCO2	2401-002300	C-AL;47uF,20%,50V,GP,TP,6.3x11,5	1	SA	
PPDD1	0404-001235	DIODE-SCHOTTKY;SHK65-45R,60V,3000mA,DO-2	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
PPDD2	0401-000101	DIODE-SWITCHING;1N4148,75V,150mA,DO-35,T	1	SA	
PPDF10	0404-001235	DIODE-SCHOTTKY;SHK65-45R,60V,3000mA,DO-2	1	SA	
PPDF2	0404-001235	DIODE-SCHOTTKY;SHK65-45R,60V,3000mA,DO-2	1	SA	
PPDF3	0402-001533	DIODE-RECTIFIER;1N5408,1000V,3A,-,BK	1	SA	
PPDI1	0402-001624	DIODE-RECTIFIER;SF26,400V,2A,DO-15,TP	1	SA	
PPDO1	0402-000012	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	1	SA	
PPID1	1203-003216	IC-POSI.FIXED REG.;G9133,TO-220F,4P,10.1	1	SA	
PPIF1	1203-001589	IC-POSI.FIXED REG.;278R05,TO-220F,4P,-,P	1	SA	
PPIF2	1203-001589	IC-POSI.FIXED REG.;278R05,TO-220F,4P,-,P	1	SA	
PPII1	1203-002183	IC-SWITCH VOL. REG.;278R12,TO-220F-4L,4P	1	SA	
PPLD1	AC27-12001N	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
PPLF1	AH27-00039A	COIL CHOKE;DR CHOKE(8*6),DVD-R2000,22uH,	1	SA	
PPLI1	AC27-12001N	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	1	SA	
PPRD1	2003-000148	R-METAL OXIDE;100ohm,5%,2W,AE,TP,6x16mm	1	SC	
PPRF2	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PPRF3	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
PPRF4	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
PPRF5	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PPRF6	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
PPRI1	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PPRO1	2001-000062	R-CARBON;470OHM,5%,1/4W,AA,TP,2.4X6.4MM	1	SA	
PPZO1	0403-000390	DIODE-ZENER;UZP33B,31.4-34.6V,1000MW,DO-	1	SA	
PQIZ1	1203-003883	IC-PWM CONTROLLER;3B2065P-2,TO-220,6P,9.	1	SA	
PQTZ1	AC26-00014K	TRANS SWITCHING-RAM RECORDER;EER3527,SV-	1	SA	
PRCU1	2401-003024	C-AL;220uF,20%,200V,WT,BK,22x35,10	1	SA	
PSCX1	2305-001029	C-FILM,LEAD-PEF;10nF,10%,630V,TP,12x9x12	1	SA	
PSCZ2	2201-000129	C-CERAMIC,DISC;0.1nF,10%,1000V,Y5P,-,7x4	1	SA	
PSDZ1	0402-000012	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	1	SA	
PSRZ1	2006-000273	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.5X18M	1	SA	
PSRZ2	2006-000273	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.5X18M	1	SA	
PVCL1	2401-002608	C-AL;33uF,20%,35V,GP,TP,5x11,5	1	SA	
PVDL1	0402-001195	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	1	SA	
PVRL4	2001-000793	R-CARBON;47OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
PVZL1	0403-000713	DIODE-ZENER;MTZJ20B,18.63-17.7V,500MW,DO	1	SA	
PWR09	2007-000119	R-CHIP;560ohm,5%,1/10W,TP,1608	1	SA	
PWR10	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
PZWZ1	3711-004379	HEADER-BOARD TO CABLE;BOX,4P,1R,2mm,STRA	1	SA	
Q4M01	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	1	SA	
Q4M02	0501-000398	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	1	SA	
R4M06	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R4M07	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R4M08	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	1	SA	
R4M09	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R4M10	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	1	SA	
R4M20	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
R611	2007-000074	R-CHIP;10Oohm,5%,1/10W,TP,1608	1	SA	
R621	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R622	2001-000780	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R623	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R624	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
R633	2007-000106	R-CHIP;220Kohm,5%,1/10W,TP,1608	1	SA	
R638	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA	
R639	2007-000081	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	1	SA	
R652	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R653	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R656	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R666	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R667	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R668	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R670	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	1	SA	
R673	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R674	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R676	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R677	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R678	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R680	2001-000472	R-CARBON;2.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R6A01	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R6A02	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R6A04	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R6A05	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R6A10	2001-000273	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	1	SA	
R701	2001-000837	R-CARBON;51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
R702	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R703	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R704	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R705	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R706	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R707	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R708	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
R711	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
R7K1	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
R7K2	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
R7K3	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	1	SA	
RA606	2001-000281	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	1	SA	
SVL2	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
SVLA	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
SW701	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
SW702	3404-001261	SWITCH-TACT;15V DC,20mA,100gf,7.4X7.95X1	1	SA	
TC1	2401-004014	C-AL;4.7uF,20%,16V,-,TP,4x5,2.5	1	SA	
TC10	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
TC11	2401-004014	C-AL;4.7uF,20%,16V,-,TP,4x5,2.5	1	SA	
TC12	2202-000253	C-CERAMIC,MLC-AXIAL;4.7nF,20%,16V,Y5R,-,	1	SA	
TC13	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
TC14	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
TC15	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
TC16	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
TC17	2203-001652	C-CER,CHIP;470nF,+80-20%,16V,Y5V,TP,1608	1	SA	
TC19	2203-001034	C-CER,CHIP;5.6nF,10%,50V,X7R,1608	1	SA	
TC2	2203-000531	C-CER,CHIP;2.7nF,10%,50V,X7R,1608	1	SA	
TC20	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
TC21	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608	1	SA	
TC22	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
TC3	2203-000972	C-CER,CHIP;47nF,10%,16V,X7R,1608	1	SA	
TC4	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
TC5	2401-001020	C-AL;3.3UF,20%,50V,GP,TP,4X7,5	1	SA	
TC6	2401-004014	C-AL;4.7uF,20%,16V,-,TP,4x5,2.5	1	SA	
TC7	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
TC74	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
TC8	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	
TC9	2401-000414	C-AL;10uF,20%,16V,GP,TP,4x7,5	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
TE12	2401-001250	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	1	SA	
TE5	2401-003107	C-AL;47uF,20%,16V,GP,TP,5x7,5	1	SA	
TE8	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
TL5	2701-000002	INDUCTOR-AXIAL;100UH,10%,4298	1	SA	
TM1	AK40-00019A	TM BLOCK;VRA05ASE,NTSC,181CH,-,25dB,5V,	1	SA	
TR1	2007-000082	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	1	SA	
TR10	2007-000121	R-CHIP;820ohm,5%,1/10W,TP,1608	1	SA	
TR2	2007-000842	R-CHIP;3Kohm,1%,1/10W,TP,1608	1	SA	
TR3	2007-000125	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	1	SA	
TR4	2007-001125	R-CHIP;68Kohm,1%,1/10W,TP,1608	1	SA	
TR5	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SA	
TR6	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	1	SA	
TR7	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
TR8	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608	1	SA	
TR9	2007-000121	R-CHIP;820ohm,5%,1/10W,TP,1608	1	SA	
VC17	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC6	2203-005148	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	1	SA	
VC7	2202-000797	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	1	SA	
VC8	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	1	SA	
VC9	2202-002037	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	1	SA	
VDR1	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VDR2	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VDR4	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VDR5	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VDR6	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	1	SA	
VE1	2401-002165	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	1	SA	
VE10	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE2	2401-000918	C-AL;22uF,20%,16V,GP,-,6.3x7,5	1	SA	
VE4	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE5	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE6	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE7	2401-001479	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	1	SA	
VE8	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
VE9	2401-001915	C-AL;1uF,20%,50V,GP,TP,3x5,5	1	SA	
VIC1	1201-002335	IC-VIDEO AMP;MM1692XVBE,TSOP,16P,5x4.4mm	1	SA	
VL1	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VL11	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
VL12	2701-000181	INDUCTOR-AXIAL;33uH,5%,2434	1	SA	
VL6	2703-000398	INDUCTOR-SMD;10uH,10%,3225	1	SA	
VR30	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR31	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR32	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR33	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR34	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR35	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR36	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VR60	2007-001167	R-CHIP;75ohm,5%,1/10W,TP,1608	1	SA	
VZ1	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ10	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ11	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ12	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ2	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ3	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ4	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ5	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ6	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ7	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ8	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
VZ9	0403-001083	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	1	SA	
W004	6003-000283	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	1	SA	
W623	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W793	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W807	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W823	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W846	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W868	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W881	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
W882	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
W885	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W889	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W890	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W893	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
W894	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
W920	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W922	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W923	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
W927	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216	1	SA	
XT4M01	2801-003399	CRYSTAL-UNIT;3.579545MHz,15ppm,28-AAA,S,	1	SA	
XT601	2801-001384	CRYSTAL-UNIT;14.31818MHz,30ppm,28-AAA,16	1	SC	
XT602	2801-003318	CRYSTAL-UNIT;32.768KHz,20ppm,28-AAP,12.5	1	SA	
H001	**AK97-01553A**	**ASSY-LOADER;-,SV-R3600,LOADER ASSY**	**1**	**SA**	
C012	AK61-00475A	SPRING ETC;SOH-DDR,SUS,-,-,-,L6.8,-,T0.1	1	SNA	
C771	AK61-00390A	HOLDER-WIRE;SOH-DR2,PPS,T5.2,W14.1,L6.78	1	SNA	
CIC1	1203-003177	IC-VOL. DETECTOR;BD5326G,SSOP,5P,2.9x1.6	1	SA	
CN1	3708-002193	CONNECTOR-FPC/FFC/PIC;50P,0.5mm,SMD-A,AU	1	SA	
DECK_C	3708-002176	CONNECTOR-FPC/FFC/PIC;5P,1mm,SMD-A,SN,N,	1	SA	
H001	AK97-01324A	ASSY-RECORDER DECK;-,DP-RW2,-	1	SNA	
H103	AK66-00042A	GEAR-PULLEY;DP-15,POM,-,-,-,WHT,-,-,-	1	SA	
H104	AK97-00608A	ASSY-MOTOR LOAD;-,DP-15,-	1	SA	
H105	6602-001076	BELT-RECTANGULAR;CR,T1.2,4.3%,1.2X25.1,B	1	SA	
H106	AK66-00041A	GEAR-TRAY;DP-15,POM,-,-,-,WHT,-,-,-	1	SA	
H107	AK66-00071A	SLIDER-HOUSING;DP-RW2,POM,T17,W17.2,L98.	1	SNA	
H108	AK63-00276A	TRAY-DISC;DP-RW2,ABS,T1.5,W124,L188.8,≥^{g}	1	SNA	
H202	AK73-00038A	RUBBER-INSULATOR;DP-R3L,Butyl,8.9*11.6,H	4	SNA	
H207	AK31-00028A	MOTOR SPINDLE;DP-R3L,8500,9.8mN.m,DC12V,	1	SNA	
H209	AK64-01335A	CHASSIS-SUB;DP-RW2,ABS,T1.5,W60.9,L124.4	1	SNA	
H211	AK97-01360A	ASSY-PICK UP;ZN,SOH-DR3,-	1	SNA	
H213	AK97-01330A	ASSY-PCB MOTOR;ASSY,DP-RW2,ASSY	1	SNA	
H241	AK41-00399A	FFC-PU;DP-RW2,PITCH : 0.5,UL2896,50P,	1	SNA	
H265	AK61-00489A	BRACKET-SHAFT PU;DP-RW2,SUS-301CSP,T0.35	2	SNA	
H268	AK61-00452A	SPRING ETC-HINGE PU;DP-R2,SUS304WPB,0.2,	1	SNA	
H271	AK61-00491A	HINGE-PU;DP-RW2,POM KEPITAL TX-31,T10.7	1	SNA	
H275	AK66-00072A	SHAFT-PU;DP-RW2,SUS420J2,91.5,3,NATURAL	2	SNA	
H401	AK61-00485B	FRAME-MAIN;DP-R3,ABS,ABS,-,BLK,-,W150,L1	1	SNA	
JP9	3708-001331	CONNECTOR-FPC/FFC/PIC;40P,0.5mm,SMD-A,AU	1	SA	
PC1	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
PC10	2402-000179	C-AL,SMD;47uF,20%,16V,GP,TP,6.6x6.6x5.7	1	SA	
PC12	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
PC14	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
PC15	2404-001131	C-TA,CHIP;22UF,10%,10V,GP,TP,3528	1	SA	
PC2	2203-006214	C-CER,CHIP;2200nF,10%,25V,X7R,3216	1	SA	
PC3	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	1	SA	
PC4	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
PC5	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	1	SA	
PC6	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
PC7	2203-005171	C-CER,CHIP;1000nF,10%,16V,X7R,2012	1	SA	
PC8	2203-005171	C-CER,CHIP;1000nF,10%,16V,X7R,2012	1	SA	
PC9	2402-000179	C-AL,SMD;47uF,20%,16V,GP,TP,6.6x6.6x5.7	1	SA	
PCN	3711-005477	HEADER-BOARD TO CABLE;BOX,4P,1R,2mm,SMD-	1	SA	
PIC2	1203-003997	IC-MULTI REG.;BA30E00WHFP,HRP,7P,9.39x8m	1	SA	
PIC3	1203-003999	IC-POSI.FIXED REG.;BH25FB1WHFV,HVSOF,5P,	1	SA	
PL1	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	1	SA	
PL3	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	1	SA	
PL4	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	1	SA	
PL5	2901-001281	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	1	SA	
PR1	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	1	SA	
PR2	2007-000616	R-CHIP;24Kohm,5%,1/10W,TP,1608	1	SA	
RC10	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC13	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC14	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC15	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC16	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC17	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC19	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC21	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC22	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
RC23	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC25	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
RC26	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC27	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
RC28	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC29	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC3	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC30	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC31	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC32	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	SA	
RC33	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC34	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC35	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC36	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC37	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC38	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC39	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC40	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC41	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC42	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC43	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC44	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC45	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC46	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC47	2203-000627	C-CER,CHIP;0.022nF,5%,50V,C0G,1005	1	SA	
RC48	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC49	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
RC50	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC51	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC52	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC53	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	SA	
RC54	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC55	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC56	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC57	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC58	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
RC59	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC6	2203-005496	C-CER,CHIP;220nF,+80-20%,10V,Y5V,1005	1	SA	
RC60	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC61	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC62	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC63	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC64	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC65	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	1	SA	
RC66	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC67	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC68	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC69	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,1005	1	SA	
RC7	2203-005496	C-CER,CHIP;220nF,+80-20%,10V,Y5V,1005	1	SA	
RC70	2203-001239	C-CER,CHIP;0.082nF,5%,50V,NP0,1005	1	SA	
RC71	2203-001239	C-CER,CHIP;0.082nF,5%,50V,NP0,1005	1	SA	
RC72	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
RC73	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
RC74	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,1005	1	SA	
RIC2	AK13-00024A	IC ASIC;S1L1100X01,-,128,5V,-0 ~ +70 ?	1	SNA	
RR10	2007-000151	R-CHIP;15Kohm,5%,1/16W,TP,1005	1	SA	
RR11	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
RR13	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR16	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
RR17	2007-003009	R-CHIP;16Kohm,5%,1/16W,TP,1005	1	SA	
RR18	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	1	SA	
RR21	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	SA	
RR22	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	SA	
RR24	2007-000145	R-CHIP;6.2Kohm,5%,1/16W,TP,1005	1	SA	
RR25	2007-000154	R-CHIP;24KOHM,5%,1/16W,TP,1005	1	SA	
RR26	2007-001320	R-CHIP;1.8Kohm,5%,1/16W,TP,1005	1	SA	
RR27	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
RR28	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
RR29	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
RR30	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	1	SA	
RR32	2007-007021	R-CHIP;75Kohm,5%,1/16W,TP,1005	1	SA	
RR33	2007-000154	R-CHIP;24KOHM,5%,1/16W,TP,1005	1	SA	
RR35	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	1	SA	
RR37	2007-000170	R-CHIP;1Mohm,5%,1/16W,TP,1005	1	SA	
RR40	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR41	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR43	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
RR44	2007-000151	R-CHIP;15Kohm,5%,1/16W,TP,1005	1	SA	
RR45	2007-000151	R-CHIP;15Kohm,5%,1/16W,TP,1005	1	SA	
RR46	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
S.N.A	AH31-00025A	MOTOR-LOADING;RF-300EA-1D390,DP-7,170mA,	1	SNA	
S.N.A	AK66-00006A	PULLEY MOTOR;DP-9,POM ,-,BLK,-,-,-,-	1	SNA	
S.N.A	0201-000169	ADHESIVE-CYA;ARCN-A501F,NTR	0.01	SNA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
S.N.A	0201-001411	ADHESIVE-UV;8833,YEL,50000,250G/1BTL	0.01	SNA	
S.N.A	0201-001525	ADHESIVE-UV;8840L,YEL,TRANS,23000,DISCMA	0.05	SNA	
S.N.A	0201-001819	ADHESIVE-UV;8833M,YELLOW,21000mPas,89%(H	0.08	SNA	
S.N.A	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LFM2,-,D	0.2	SNA	
S.N.A	AK68-00898A	LABEL BAR CODE-STICKER;DR3,DR3 LABEL,POL	1	SNA	
S.N.A	AK97-01362A	ASSY-SUB PICK UP;ZN,SOH-DR3,-	1	SNA	
S.N.A	0201-001553	ADHESIVE-TP;G-800-A,GRY,220?40Pa.S,-	0.013	SNA	
S.N.A	0201-001718	ADHESIVE-A.C.F;A-80T,SILVER,11000-12000C	0.003	SNA	
S.N.A	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LFM2,-,D	0.5	SNA	
S.N.A	AK97-01358A	ASSY-FPCB;-,SOH-DR2.5,RAMBO2.5 FPCB ASSY	1	SNA	
S.N.A	0201-000172	ADHESIVE-AA;EP-171,BRN	0.01	SNA	
S.N.A	0202-001221	SOLDER-CREAM;PF305-116HO(A),-,25~45 ß≠,9	0.12	SNA	
S.N.A	0603-001181	PHOTO DIODE;5.5V,658.79nm,-	1	SNA	
S.N.A	0603-001187	PHOTO-RECEIVER;6.0V,17.0mA,650nm,MOLD	1	SNA	
S.N.A	1003-001854	IC-DIODE DRIVER;EL6939CLZ,LPP,32P,5x6mm,	1	SNA	
S.N.A	1404-001328	THERMISTOR-NTC;10Kohm,-,3370K,-,-,-,TP	1	SNA	
S.N.A	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000076	R-CHIP;330ohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000309	R-CHIP;10ohm,5%,1/10W,TP,1608	1	SA	
S.N.A	2007-000869	R-CHIP;4.7Kohm,1%,1/10W,TP,1608	1	SA	
S.N.A	2007-000929	R-CHIP;470ohm,1%,1/10W,TP,1608	1	SA	
S.N.A	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,2.	1	SA	
S.N.A	2011-001344	R-NET;100ohm,5%,1/16W,L,CHIP,8P,TP,2	1	SA	
S.N.A	2104-001087	VR-SMD;2.2Kohm,25%,0.15W,TOP	2	SA	
S.N.A	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,TP,1608	8	SA	
S.N.A	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SA	
S.N.A	2203-005664	C-CER,CHIP;4700nF,10%,6.3V,X5R,2012	1	SA	
S.N.A	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
S.N.A	3708-002193	CONNECTOR-FPC/FFC/PIC,50P,0.5mm,SMD-A,AU	1	SA	
S.N.A	AK32-00004A	SENSOR PHOTO;CNB1001,-25~85,-,-,20~50mA,	1	SNA	
S.N.A	AK41-00422A	FPC-FPCB-MAIN;SOH-DR2.5,00,POLYAMIDE,-,0	1	SNA	
S.N.A	AK61-00548A	PLATE-PD;SOH-DR3.5,Zn,T1.3,-,L11.54,GRY	1	SNA	
S.N.A	AK67-00053A	LENS-CDL;SOH-DR3,ZEONEX,CLEAR,4.2X3.5,5	1	SNA	
S.N.A	AK97-01361A	ASSY-OPT;ZN,SOH-DR3,-	1	SNA	
S.N.A	0201-001411	ADHESIVE-UV;8833,YEL,50000,250G/1BTL	0.04	SNA	
S.N.A	0201-001525	ADHESIVE-UV;8840L,YEL,TRANS,23000,DISCMA	0.01	SNA	
S.N.A	0201-001709	ADHESIVE-UV;8839L,YEL,24500mPa.s,-	0.02	SNA	
S.N.A	0201-001819	ADHESIVE-UV;8833M,YELLOW,21000mPas,89%(H	0.03	SNA	
S.N.A	0602-001127	DIODE-LASER;160mW,2,658nm,CAN	1	SNA	
S.N.A	0602-001128	DIODE-LASER;8.5mW,2,785nm,CAN	1	SNA	
S.N.A	AH61-00812A	SPRING ETC-L/G HOLDER;SOH-DH2,PBR,-,-,-	1	SNA	
S.N.A	AK61-00470A	HOLDER-LD CD;SOH-DDR,Zn,-,W6.8,L6.84,GRY	1	SNA	
S.N.A	AK61-00472A	HOLDER-LD DVD;SOH-DDR,Zn,T3.14,W7.9,L11.	1	SNA	
S.N.A	AK61-00473A	HOLDER-LG;SOH-DDR,Zn,T5.7,W7.2,L10.7,GRY	1	SNA	
S.N.A	AK61-00546A	BASE-PU;SOH-DR3.5,ZnDC,T14.1,W36.3,L51	1	SNA	
S.N.A	AK61-00547A	HOLDER-DVD GT;SOH-DR3.5,Zn,-,T5,L3,GRY,-	1	SNA	
S.N.A	AK63-00264A	COVER-BASE;SOH-DDR,CU,T0.3,W31.3,L33,-,-	1	SNA	
S.N.A	AK67-00012A	LENS-DR1 CL;SHO-DR1,PLASTIC,NTR,•'6.6,T1	1	SNA	
S.N.A	AK67-00033A	LENS-PLATE;SOH-DR3,GLS,WHT,8.0*4.0,2.1,-	1	SNA	
S.N.A	AK67-00034A	LENS-PBS;SOH-DR3,GLS,WHT,8.7*4.0,2.1,-,	1	SNA	
S.N.A	AK67-00035A	LENS-MR;SOH-DR3,GLS,WHT,5.0*4.0,2.5,-,	1	SNA	
S.N.A	AK67-00036A	LENS-DVD GT;SOH-DR3,GLS,WHT,2.5*3.0,1.0,	1	SNA	
S.N.A	AK67-00038A	LENS-CBS;SOH-DR3,GLS,WHT,3.0*3.0,3.0,-,	1	SNA	
S.N.A	AK67-00041A	LENS-CD GT;SOH-DR2.5,GLS,WHT,2.0*1.5,1.0	1	SNA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
S.N.A	AK67-00052A	LENS-ASL;DR3/BDP,APEL/Z340R,WHT,4PI,1.0	1	SNA	
S.N.A	AK97-01377A	ASSY-ACT;-,SOH-DR3,-	1	SNA	
S.N.A	0201-001081	ADHESIVE-AA;1401C,RED,-,BOND-LOCK SCREW	0.006	SNA	
S.N.A	0201-001230	ADHESIVE-CYA;LOCTITE 480,BLK,300,-	0.002	SNA	
S.N.A	0201-001421	ADHESIVE-UV;SDM-118,TRP,5500,250G/BTL	0.04	SNA	
S.N.A	0201-001709	ADHESIVE-UV;8839L,YEL,24500mPa.s,-	0.01	SNA	
S.N.A	0201-001793	ADHESIVE-UV;8791L3,WHITE,20000mPa.s,-	0.004	SNA	
S.N.A	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LFM2,-,D	0.085	SNA	
S.N.A	3302-001651	MAGNET-RARE EARTH;AF,14000Gauss,47MGOe,1	2	SNA	
S.N.A	3812-001263	WIRE-NO SHEATH CU;SCW,-,19MM,-,-,WHT	5	SNA	
S.N.A	3812-001419	WIRE-NO SHEATH CU;SCW,0V,18.5mm,1/0.11mm	1	SNA	
S.N.A	AK62-00020A	YOKE-ACT;SOH-DR3,SPCC,T7.6,W24.8,L16.2,	1	SNA	
S.N.A	AK67-00037A	LENS-QWP;SOH-DR3,GLS,WHT,4.5*4.5,1.0,-,	1	SNA	
S.N.A	AK67-00040A	LENS-OL;SOH-DR3,PLS,WHT,3.8,1.7,-,-	1	SNA	
S.N.A	AK97-01376A	ASSY-BLADE;-,SOH-DR3,-	1	SNA	
S.N.A	0201-001253	ADHESIVE-STR;TB2212B,BLK,25(250),TB2065C	0.008	SNA	
S.N.A	0201-001371	ADHESIVE-SIL;KE3494,GRAY,50 PA,OL PROTEC	0.001	SNA	
S.N.A	0202-001215	SOLDER-BAR;HSE-16,S60S-20,D3,SN/0.5CU/0.	0.01	SNA	
S.N.A	AK61-00480A	BLADE-ACT;SOH-DR3,E5006JVL,IVORY,13*7.4*	1	SNA	
SPIN_C	3708-002067	CONNECTOR-FPC/FFC/PIC;12P,1mm,SMD-A,SN,N	1	SA	
STEP_C	3708-002018	CONNECTOR-FPC/FFC/PIC;4P,1MM,SMD-A,SN,N,	1	SA	
U8	AK13-00025A	IC ASIC;S5L1484A01,RAMBO-3,256,3.3V,-0	1	SNA	
U9	1107-001369	IC-FLASH MEMORY;29LV800,8Mbit,1Mx8/512Kx	1	SNA	
UB1	1105-001397	IC-DRAM;K4S641632,-,64Mbit,1Mx16x4Bit,	1	SA	
UC19	2203-000386	C-CER,CHIP;0.015nF,5%,50V,C0G,1005	1	SA	
UC21	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC22	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC23	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC24	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC25	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC26	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC27	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC28	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC29	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC30	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC31	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC32	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC33	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC34	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC35	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC36	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC37	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC38	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC39	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC40	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC41	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC42	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC43	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC44	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC45	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
UC46	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC47	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
UC48	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC49	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC50	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
UC51	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC52	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC53	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC54	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC55	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC56	2203-001071	C-CER,CHIP;0.056nF,5%,50V,C0G,1608	1	SA	
UC57	2203-005438	C-CER,CHIP;0.15nF,10%,50V,X7R,1005	1	SA	
UC62	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC63	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC64	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC65	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC67	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC69	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC70	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC71	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC72	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC75	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
UC76	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC77	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC79	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UC80	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
UC81	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
UR1	2011-001432	R-NET;82ohm,5%,1/16W,L,CHIP,8P,TP,2.	1	SA	
UR10	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR11	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR12	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR13	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR14	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR16	2007-000170	R-CHIP;1Mohm,5%,1/16W,TP,1005	1	SA	
UR17	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR2	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,2.	1	SA	
UR20	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR21	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR22	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR23	2007-000174	R-CHIP;47ohm,5%,1/16W,TP,1005	1	SA	
UR24	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR25	2007-001292	R-CHIP;33ohm,5%,1/16W,TP,1005	1	SA	
UR26	2007-001292	R-CHIP;33ohm,5%,1/16W,TP,1005	1	SA	
UR27	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR28	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR29	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR3	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,2.	1	SA	
UR32	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR36	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR37	2007-001325	R-CHIP;3.3Kohm,5%,1/16W,TP,1005	1	SA	
UR39	2007-000775	R-CHIP;33KOHM,5%,1/16W,TP,1005	1	SA	
UR4	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,2.	1	SA	
UR40	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR41	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR42	2007-007001	R-CHIP;3.9KOHM,5%,1/16W,TP,1005	1	SA	
UR43	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR44	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR47	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR48	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR49	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR5	2011-001261	R-NET;33ohm,5%,1/16W,L,CHIP,8P,TP,2.	1	SA	
UR55	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR58	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR59	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR6	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR63	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	1	SA	
UR64	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	1	SA	
UR69	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR7	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR73	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
UR75	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
UR76	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	1	SA	
UR77	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
UR8	2007-001217	R-CHIP;82OHM,5%,1/16W,TP,1005	1	SA	
UR80	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	1	SA	
UR81	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR87	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
UR88	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
UR89	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR9	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	1	SA	
UR90	2007-000831	R-CHIP;39Kohm,5%,1/16W,TP,1005	1	SA	
UR91	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR92	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR93	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR97	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	1	SA	
UR98	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VC1	2203-006047	C-CER,CHIP;33NF,10%,16V,X7R,TP,1005	1	SA	
VC10	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,1005	1	SA	
VC11	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
VC12	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
VC13	2404-000284	C-TA,CHIP;10uF,20%,16V,-,TP,3528	1	SA	
VC14	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
VC15	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	1	SA	
VC16	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
VC17	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
VC18	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
VC19	2203-005061	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	1	SA	
VC2	2203-006047	C-CER,CHIP;33NF,10%,16V,X7R,TP,1005	1	SA	
VC20	2203-006048	C-CER,CHIP;100NF,10%,10V,X7R,TP,1005	1	SA	
VC21	2404-001020	C-TA,CHIP;10uF,20%,10V,GP,TP,3216	1	SA	
VC3	2203-006047	C-CER,CHIP;33NF,10%,16V,X7R,TP,1005	1	SA	
VC4	2203-006047	C-CER,CHIP;33NF,10%,16V,X7R,TP,1005	1	SA	
VC5	2203-006047	C-CER,CHIP;33NF,10%,16V,X7R,TP,1005	1	SA	
VC6	2203-006047	C-CER,CHIP;33NF,10%,16V,X7R,TP,1005	1	SA	
VIC1	1003-001881	IC-MOTOR DRIVER;BD7956FS,HSSOP,54P,11.4x	1	SA	
VR1	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	1	SA	
VR10	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	1	SA	
VR11	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR12	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR13	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR14	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR16	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR18	2007-000034	R-CHIP;1OHM,5%,1/4W,TP,3216	1	SA	
VR20	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR25	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	1	SA	

Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
VR26	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
VR27	2007-000159	R-CHIP;56Kohm,5%,1/16W,TP,1005	1	SA	
VR28	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR31	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR32	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR33	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR34	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR35	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR36	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR37	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR38	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR39	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR40	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR41	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR42	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR43	3301-001419	BEAD-SMD;220ohm,1608,TP,133ohm/70MHz,29	1	SA	
VR5	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR6	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR8	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	1	SA	
VR9	2007-000164	R-CHIP;150KOHM,5%,1/16W,TP,1005	1	SA	
W012	6002-001086	SCREW-TAPPING;PH,+,B,M1.7,L5.0,ZPC(YEL),	1	SA	
W018	6003-001450	SCREW-TAPTITE;PH,+,S,M2.6,L5,ZPC(YEL)	2	SA	
W019	6003-001199	SCREW-TAPTITE;PWH,+,B,M2,L7,ZPC(YEL),SWR	4	SA	
W019	6003-001258	SCREW-TAPTITE;PH,+,B,M1.4,L2.0,NI PLT,SW	4	SA	
W019	6003-001526	SCREW-TAPTITE;CH,+,S-TITE,M1.4,L4,ZPC(BL	2	SNA	
W274	6001-001730	SCREW-MACHINE;BH,+,-,M1.7,L2.5,ZPC(YEL),	2	SA	
W291	6001-001003	SCREW-MACHINE;BH,+,M2.6,L6,ZPC(BLK),SWRC	4	SA	
W291	6001-001291	SCREW-MACHINE;CH(0.5),*,-,M1.7,L4,ZPC(BL	3	SA	
W291	6001-000883	SCREW-MACHINE;PH,+,M1.4,L5,ZPC(BLK),SWRC	1	SNA	
Y1	2802-001163	RESONATOR-CERAMIC;33.86MHz,0.5%,TP,2.5x2	1	SA	
	AK92-00876A	ASSY PCB-F/END;SV-R3600,F/END ASSY	1	SNA	
	AC99-40116E	ASSY PCB-F/END,c;SV-R3600,F/END ASSY	1	SNA	
	0202-001221	SOLDER-CREAM;PF305-116HO(A),-,25~45 ß≠,9	4.04	SNA	
	AK41-00476A	PCB-FONT;RAMBO3,EPOXY,2,-,1.3T,132*90mm	0.5	SNA	
	AC99-90138W	ASSY PCB-F/END,m;SV-R3600,F/END ASSY	1	SNA	
	0202-001214	SOLDER-WIRE FLUX;HI-ALMIT HR19M LFM2,-,D	0.167	SNA	
	AK68-00433A	LABEL WARNING-DRIVE;DP-R1,-,ART PAPER,T0	1	SNA	
	AK97-01325A	ASSY-HOUSING;-,DP-RW2,ASSY	1	SNA	
	3403-001026	SWITCH-PUSH;5V,0.7mA,DPST,OFF-ON-OFF,-	1	SA	
	AK41-00397A	PCB-DECK;DP-RW2,PHENOL,1,00,T1.6,29*15.	1	SNA	
	AK41-00400A	FFC-DECK;DP-RW2,PITCH1.0,PET,5P,-,L90	1	SNA	
	AK97-01327A	ASSY-P U DECK;ASSY,DP-RW2,DP-RW2	1	SNA	
	AK31-00024A	MOTOR STEP-FEED;-,DP-RW,727 mA,2000 ppc,	1	SNA	
	AK61-00488A	BRACKET-DECK;DP-RW2,SECC US COATING,T1.2	1	SNA	
	AK61-00490A	SPRING ETC-SHAFT PU;DP-RW2,PW2,0.8,4.8,6	2	SNA	
C011	AK61-00519A	SPRING ETC-DOOR;DVD-SR420,STS304WPB,0.2,	1	SA	
FL614	3809-001780	FFC CABLE-FLAT;30V,80C,105mm,40P,0.5mm,U	1	SA	
FL615	3809-001787	FFC CABLE-FLAT;30V,80C,115mm,13P,1mm,UL7	1	SA	
I/B	AK68-01002A	MANUAL USERS;DVD-R130,XAA,ENG,-,MOJO80,W	1	SA	DVD-R130/XAA
	AK68-01002B	MANUAL USERS;DVD-R130,XAC,ENG,FRA,	1	SA	DVD-R130/XAC
S.N.A	AK69-00371A	PACKING CASE;DVD-R130/XAA,SW-2,A-1 TYPE,	1	SA	
VS106	AK39-00086A	LEAD CONNECTOR;SV-R3600,LEAD CONNECTOR,U	1	SA	

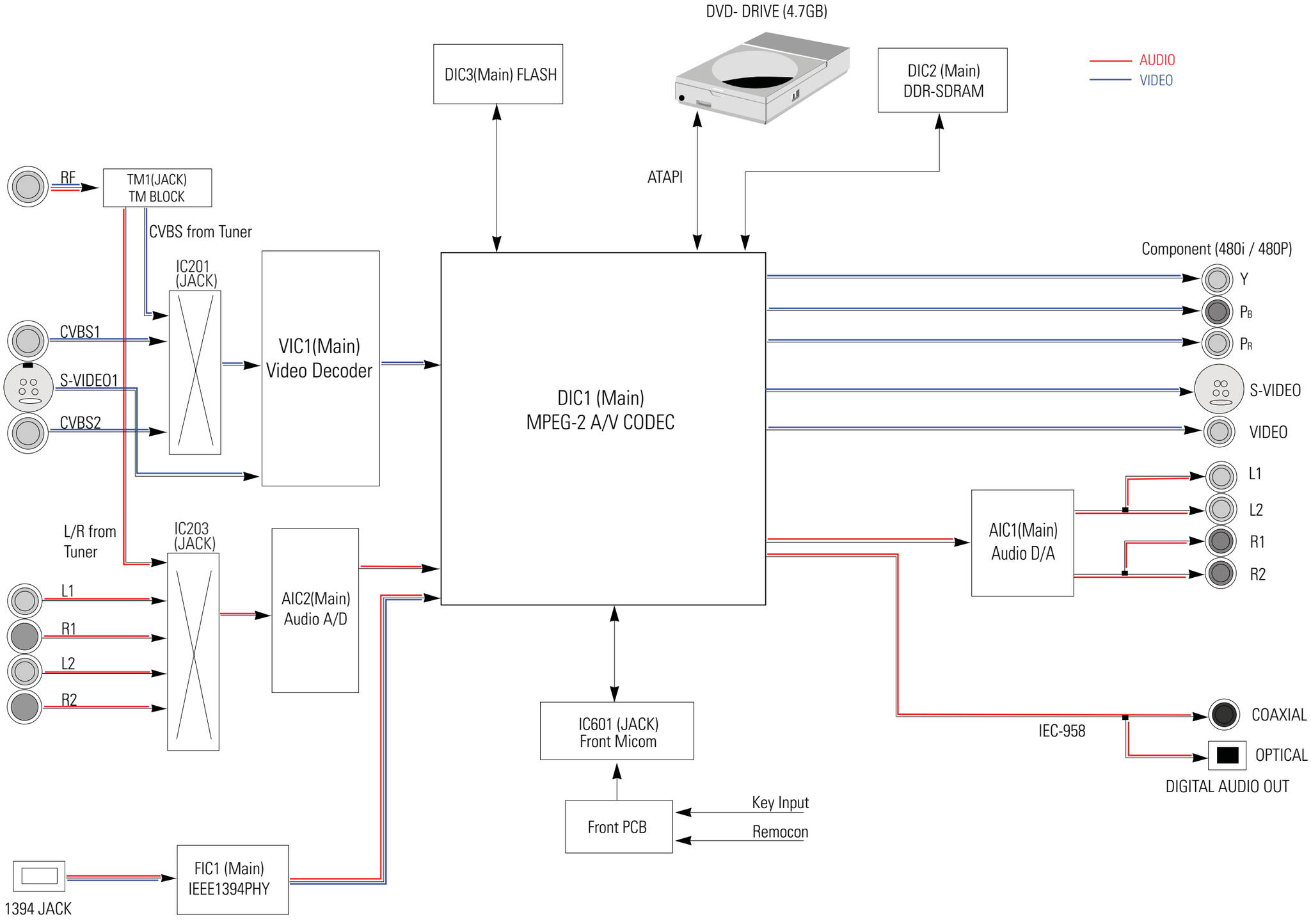
Loc.No	Part No	Description ; Specification	Q'ty	S.N.A	Remark
W001	6003-000275	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(BLK),S	2	SA	
W001	6003-000275	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(BLK),S	5	SA	
W009	6003-000276	SCREW-TAPTITE;BH,+,-,B,M3,L10,ZPC(YEL),S	8	SA	
W200	6003-001375	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	2	SA	
W268	6003-000254	SCREW-TAPTITE;BH,+,-,S,M3,L6,ZPC(WHT),SW	1	SA	
W275	6003-001561	SCREW-TAPTITE;BH,+,-,B,M3,L6,ZPC(YEL),SW	5	SA	
	AC39-00073A	CABLE-RCA;SJ01-08-099,1.2MT,3P,A/V,30A,5	1	SA	
	AC39-42001J	CABLE-RF ASSY;-,-,#1365,1200mm,3A,110V,C	1	SA	

MEMO

8. Block Diagrams

8-1 All Block Diagram - - -

8-1 All Block Diagram



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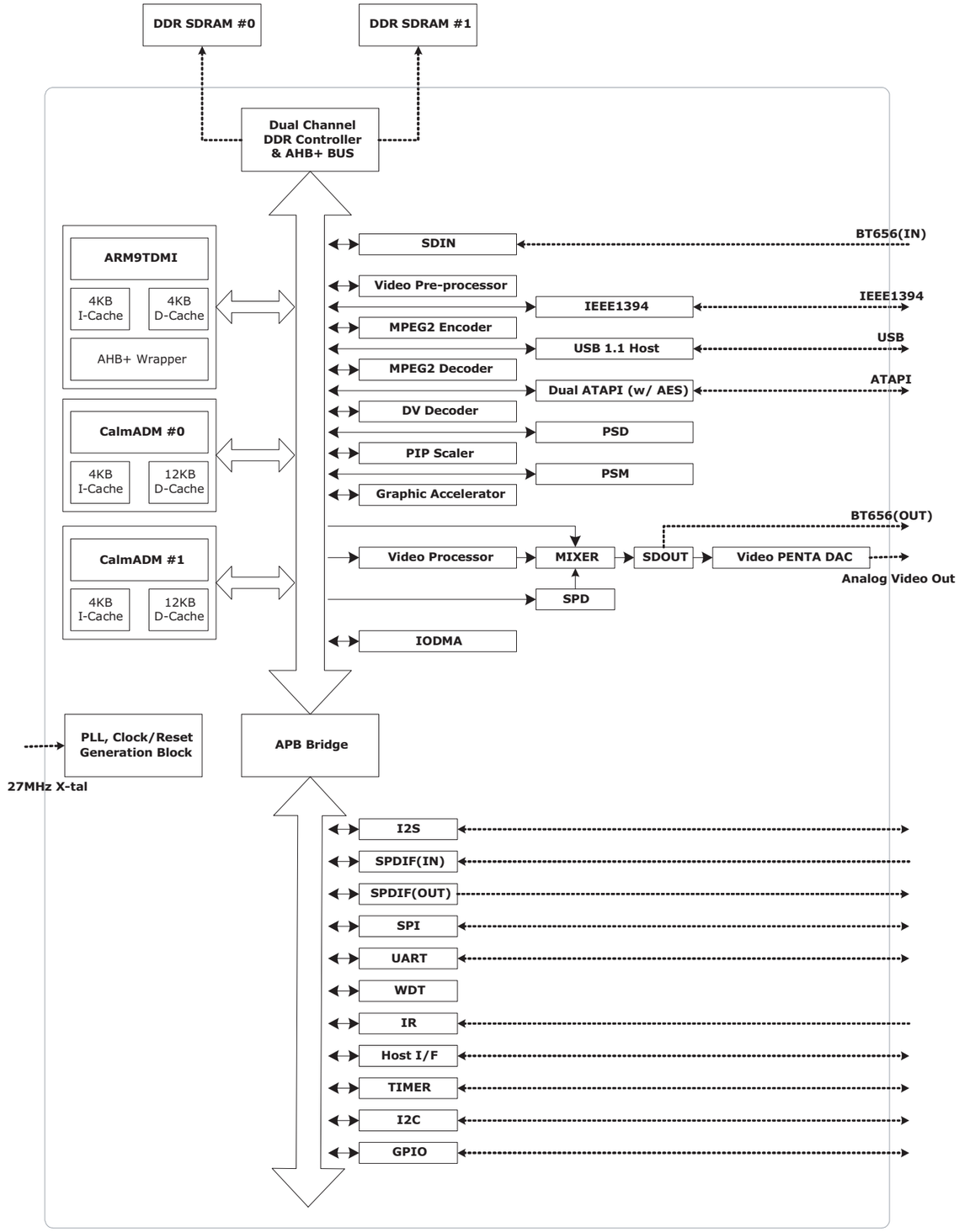
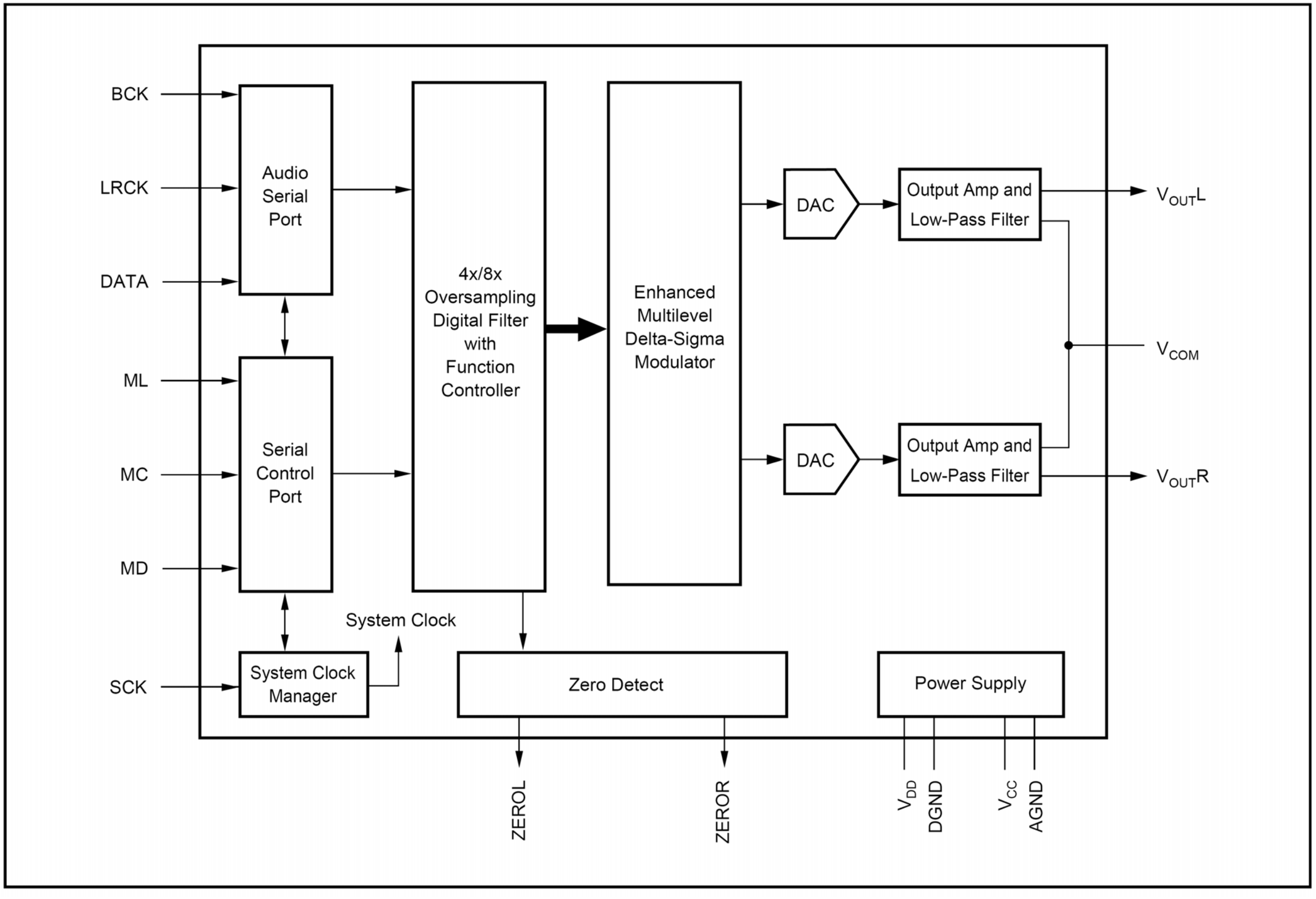
8-2 DIC1(S5L3200) Block Diagram



8-3 AIC1(PCM1742) Block Diagram



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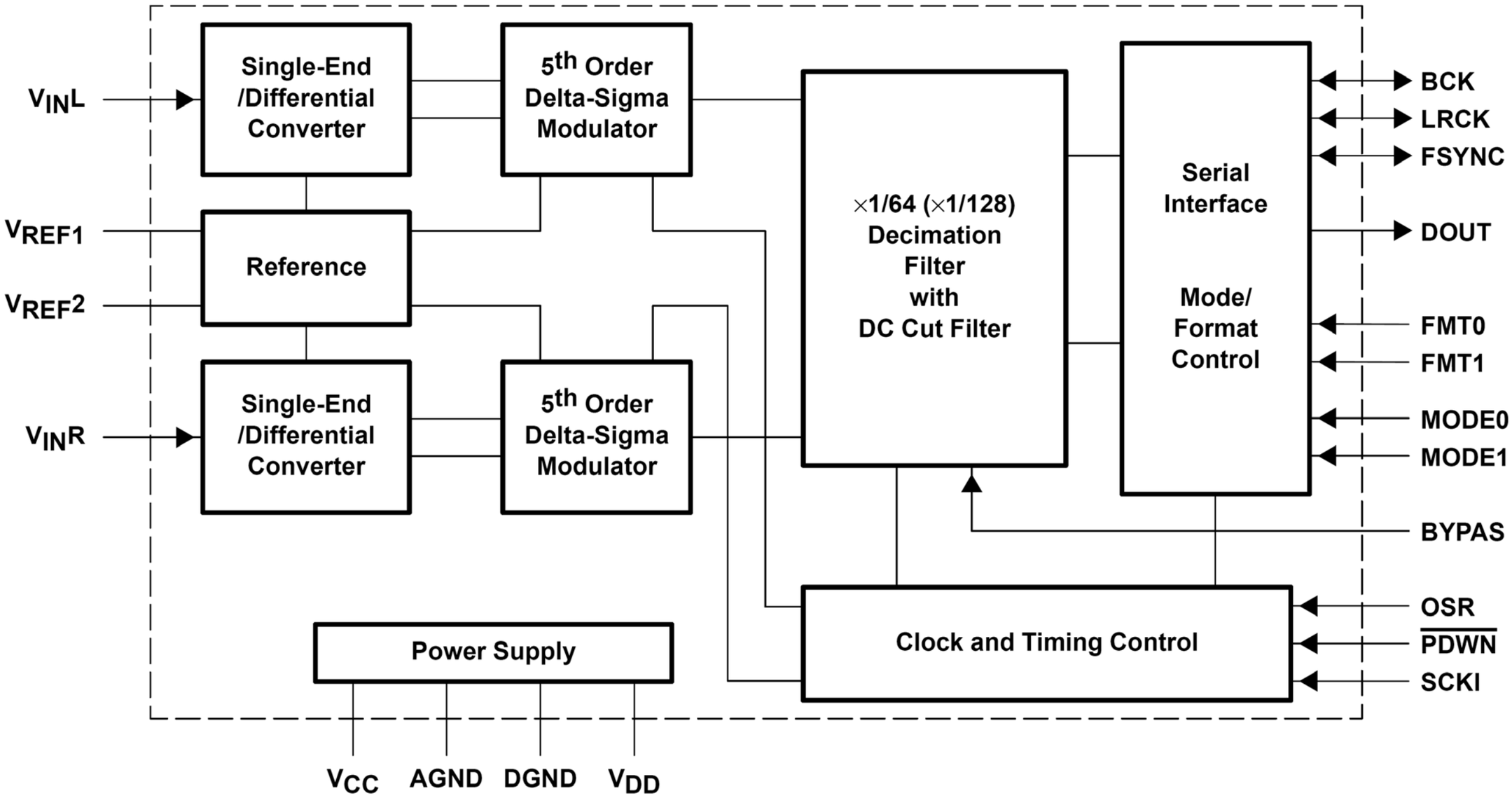
8-4 AIC2 (PCM1802) Block Diagram



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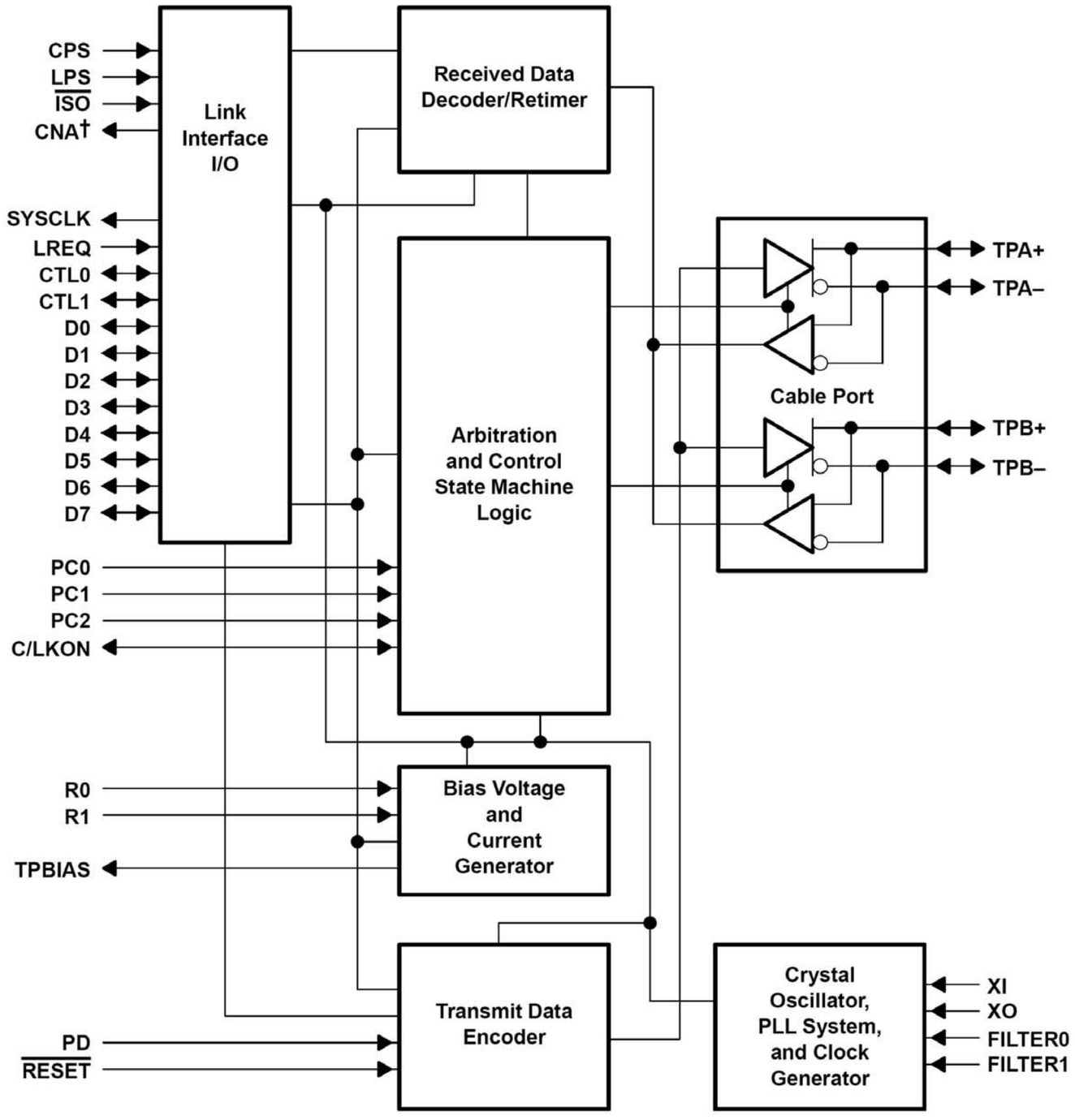
8-5 FIC1 (TSB4AB1) Block Diagram



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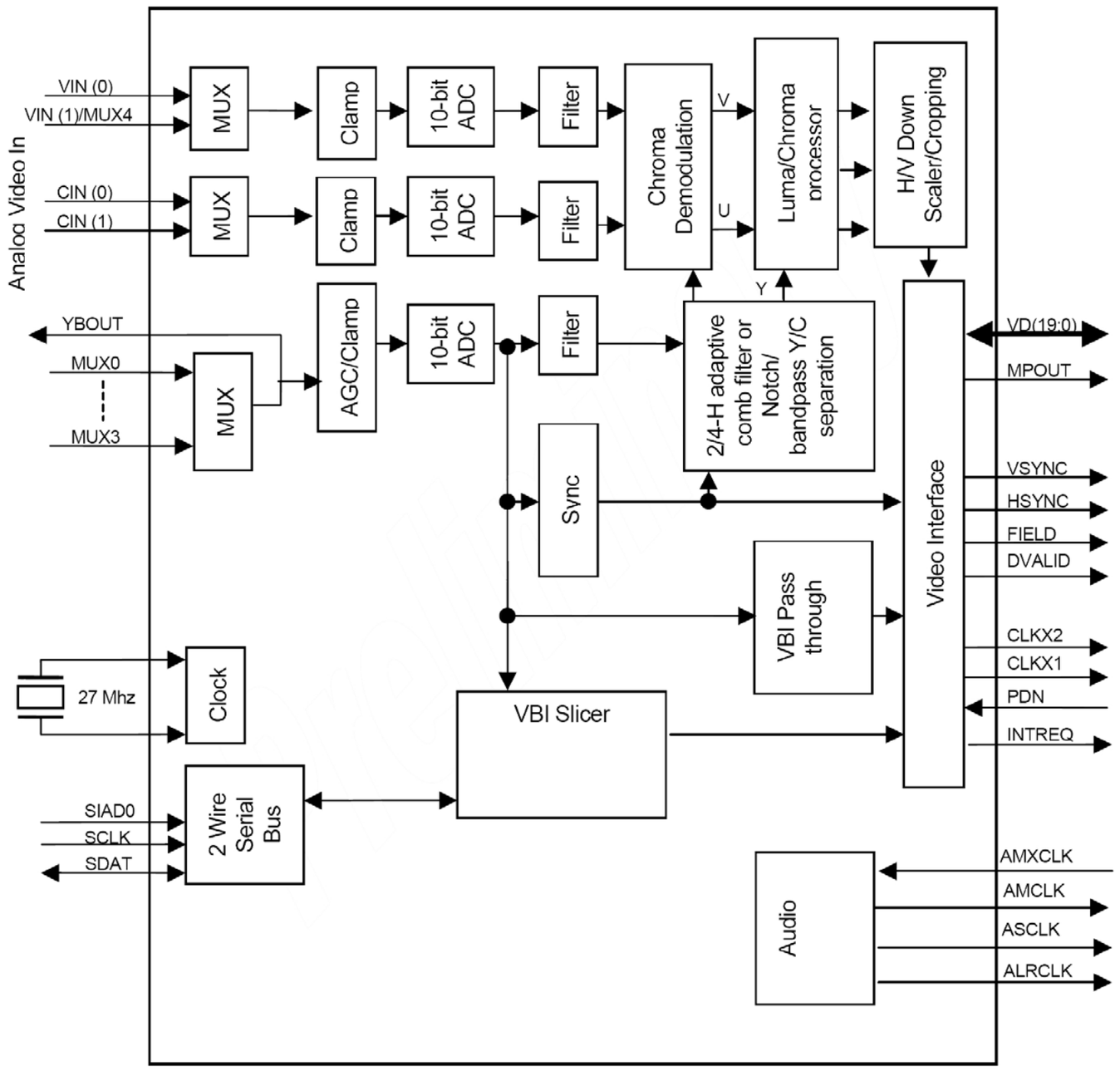
8-6 VIC1 (TW9906) Block Diagram



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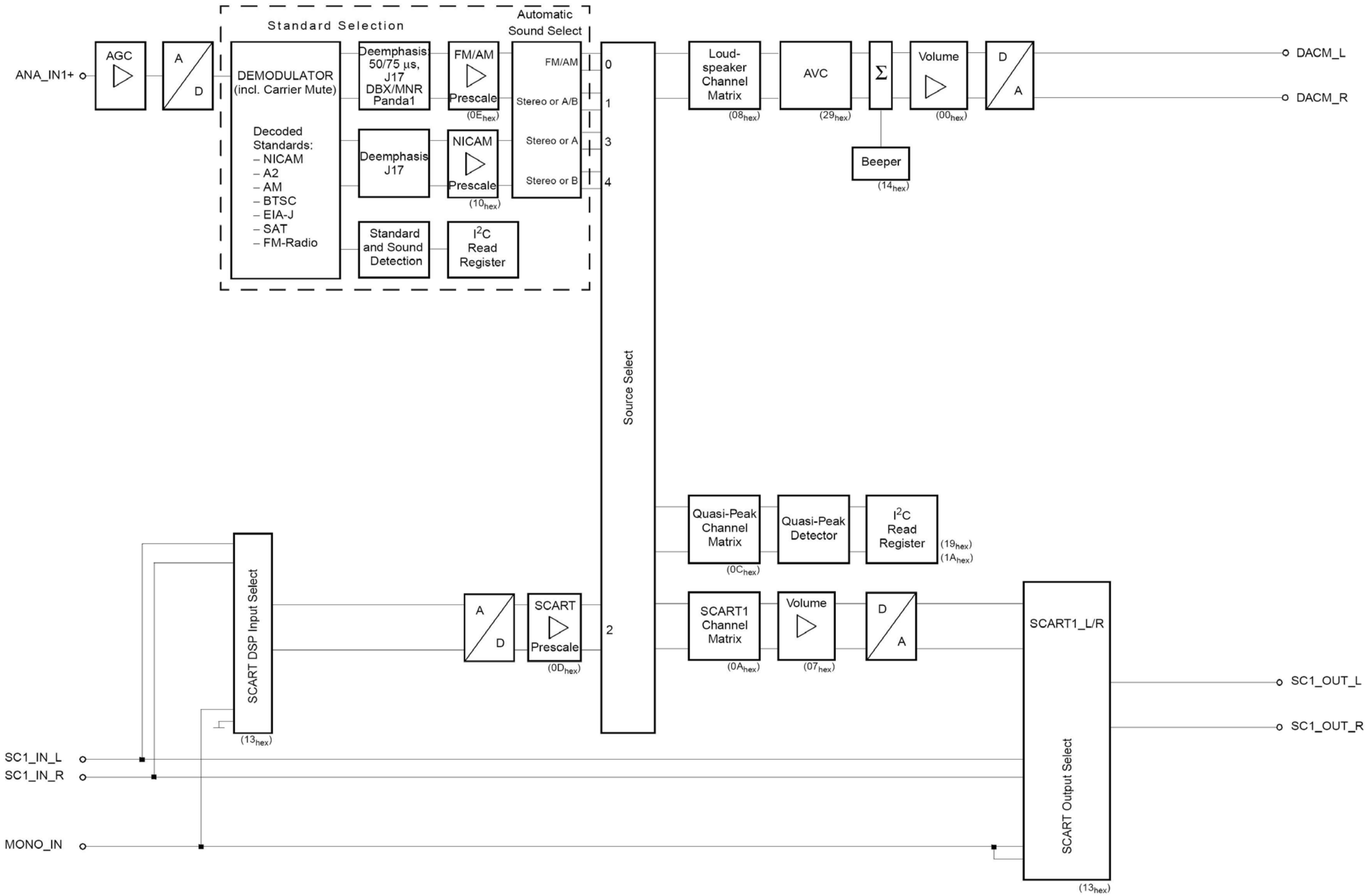
8-7 IC4N01(MSP3407G) Block Diagram



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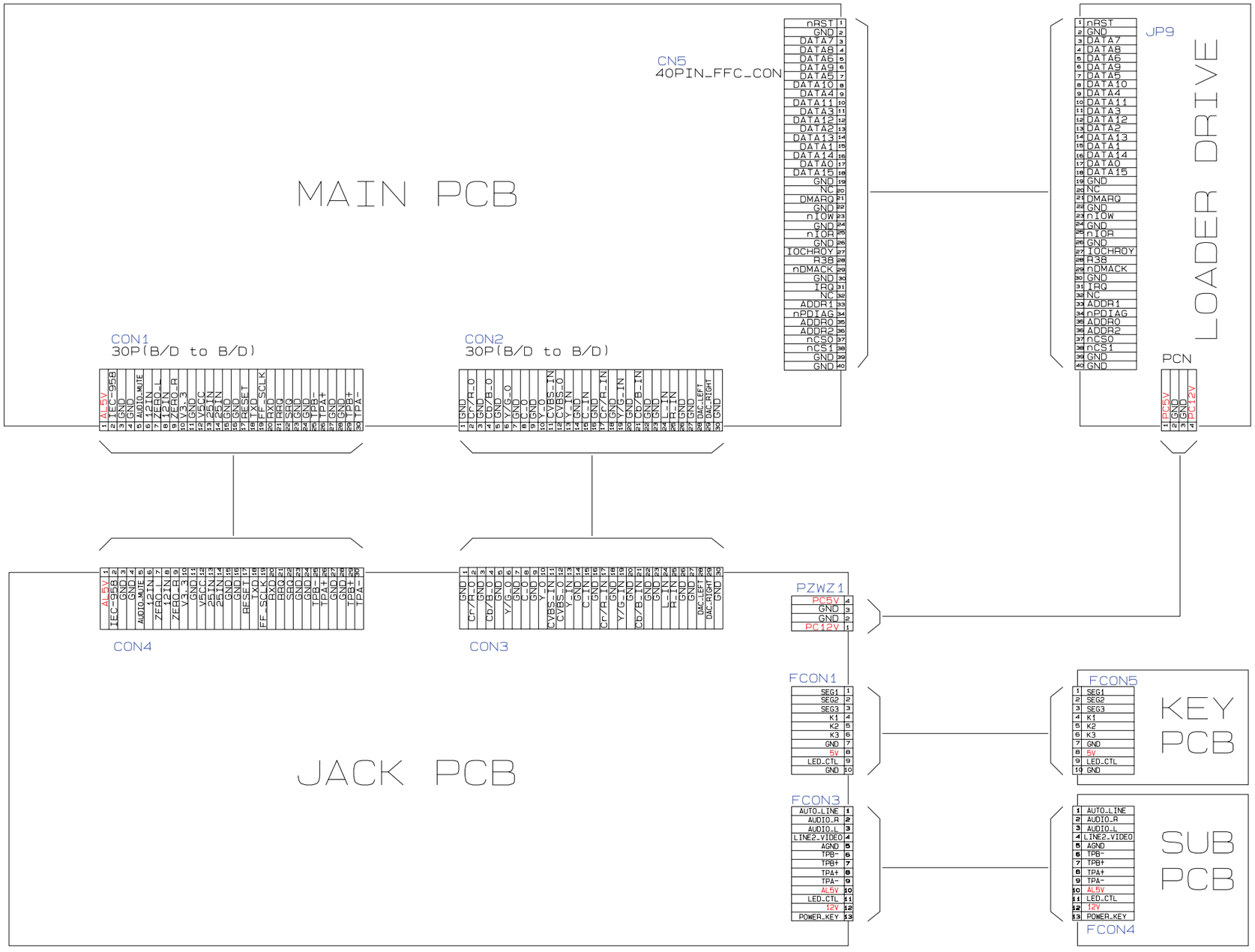
9. Wiring Diagram



MEMO

10. PCB Diagrams

10-1 Main PCB ---------- 10-2

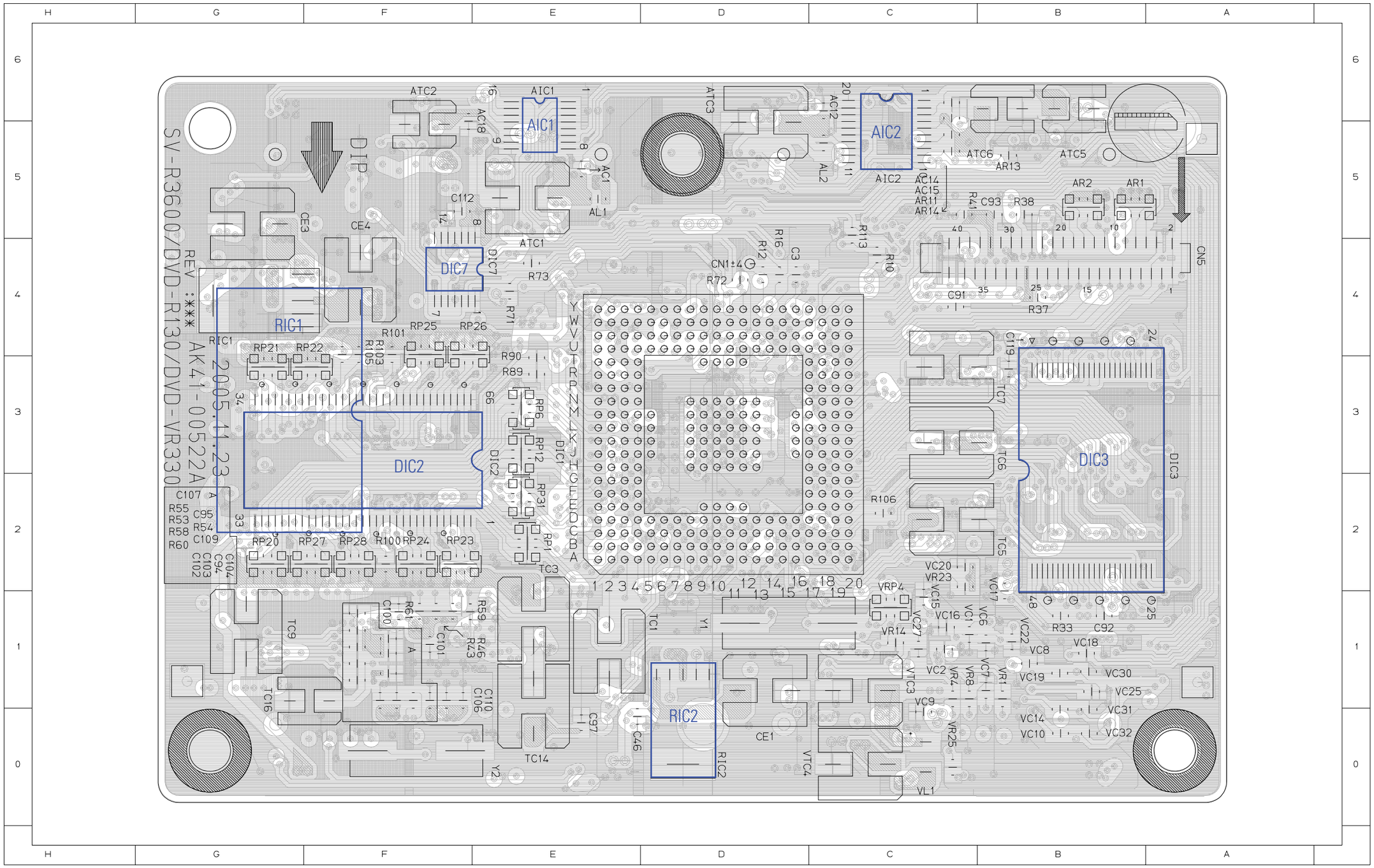
10-2 Jack PCB ---------- 10-4

10-3 Key PCB ---------- 10-6

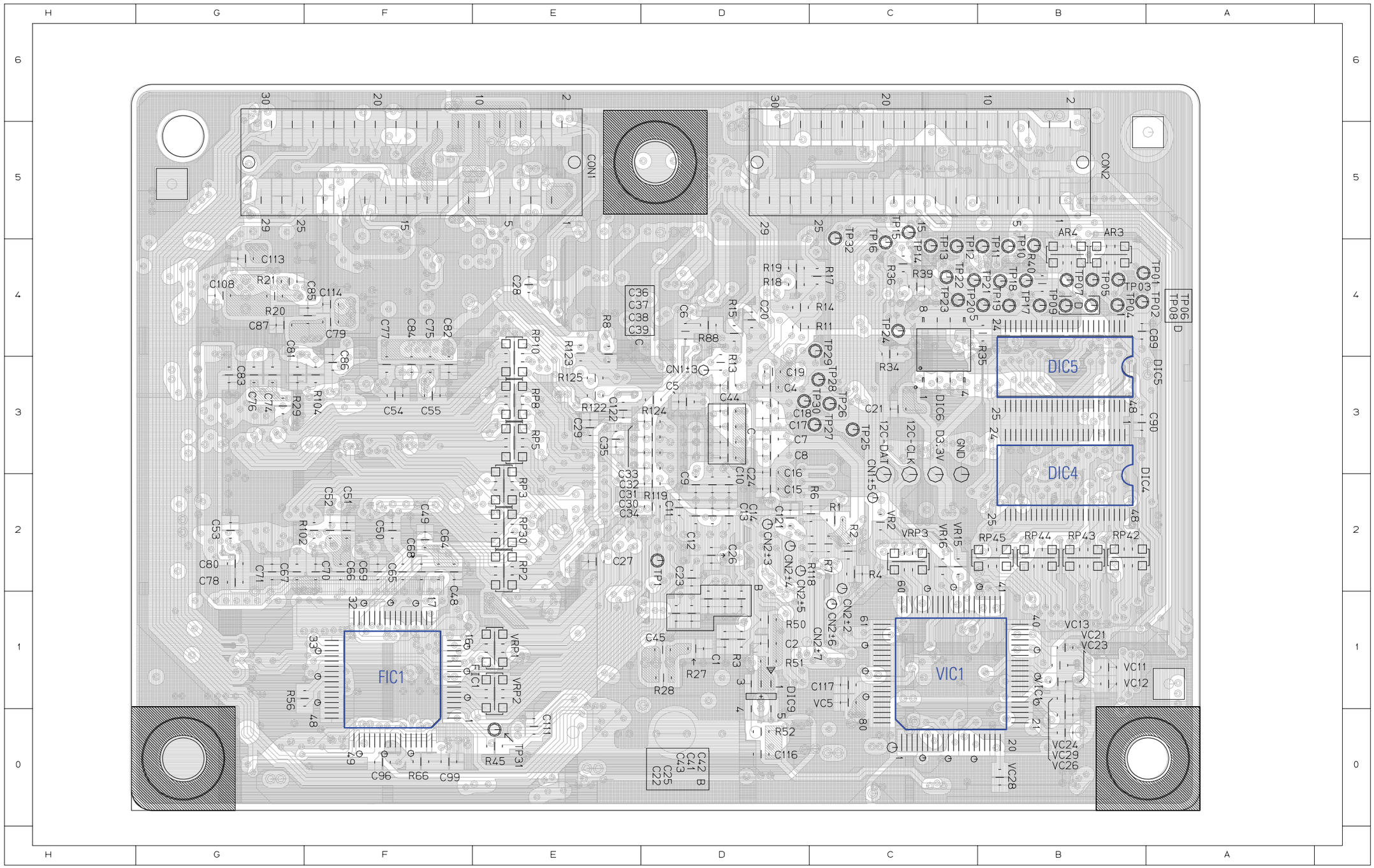
10-4 Sub PCB ---------- 10-7

10-1 Main PCB

COMPONENT SIDE

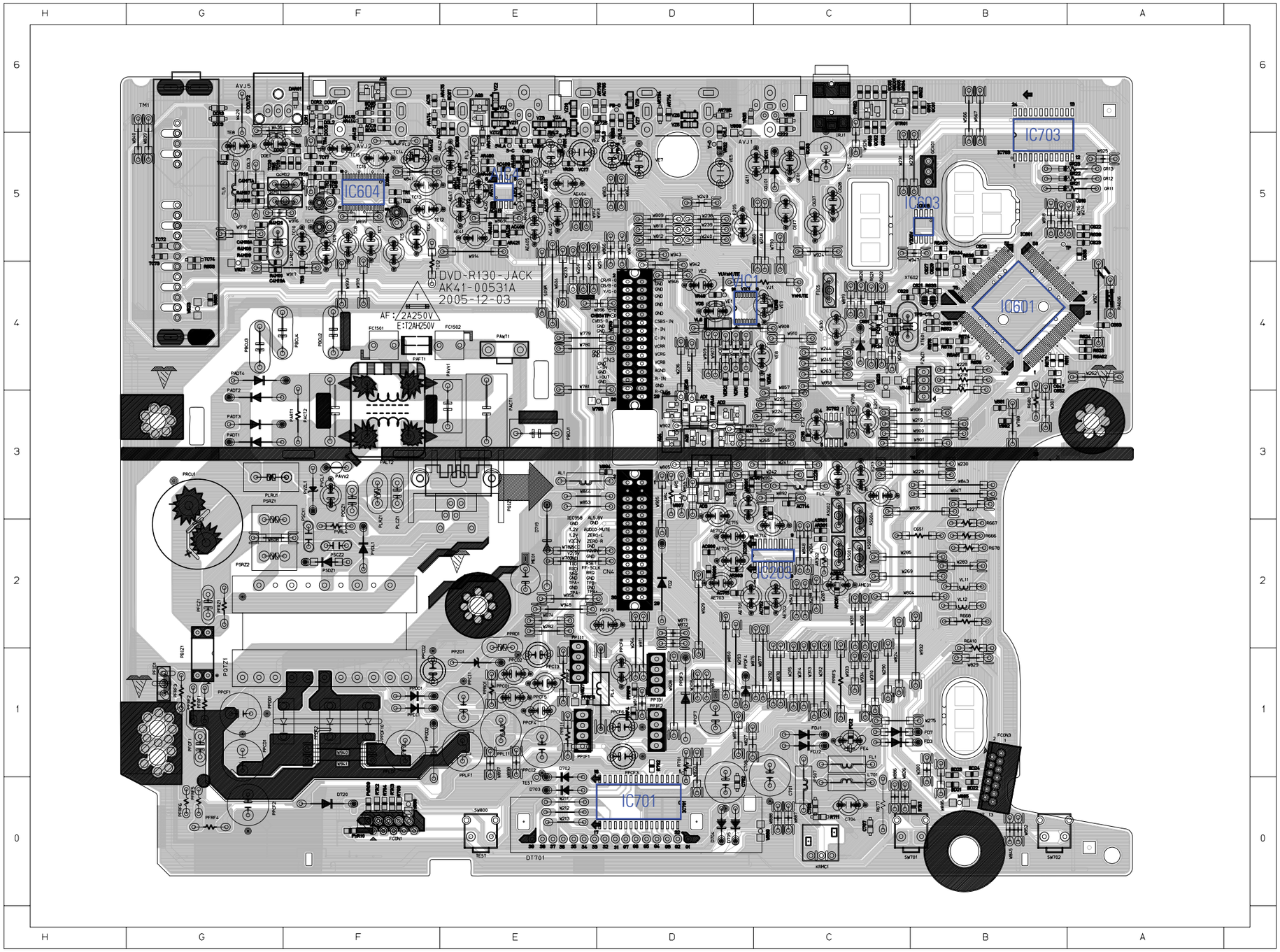


CONDUCTOR SIDE

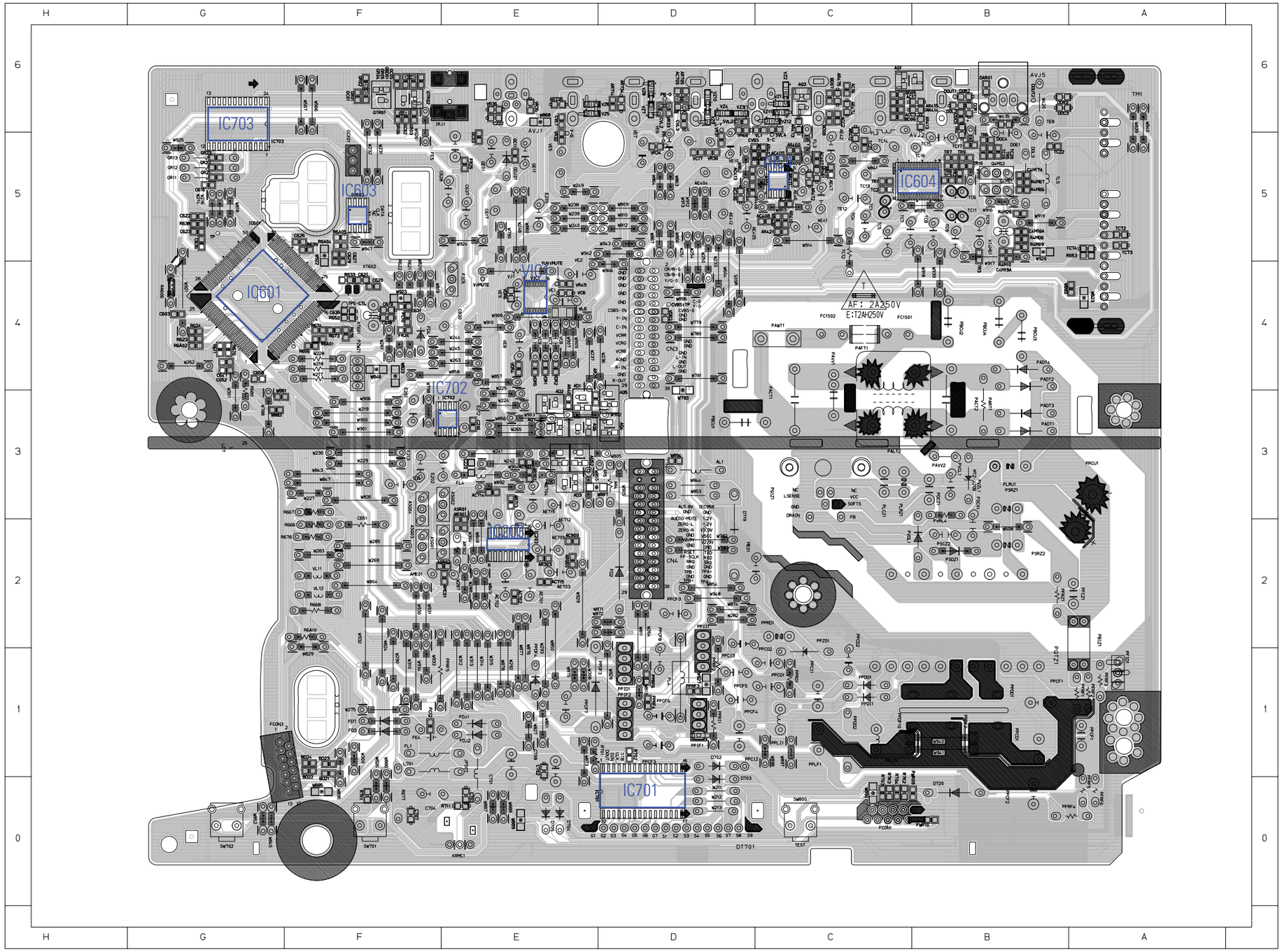


10-2 Jack PCB

COMPONENT SIDE

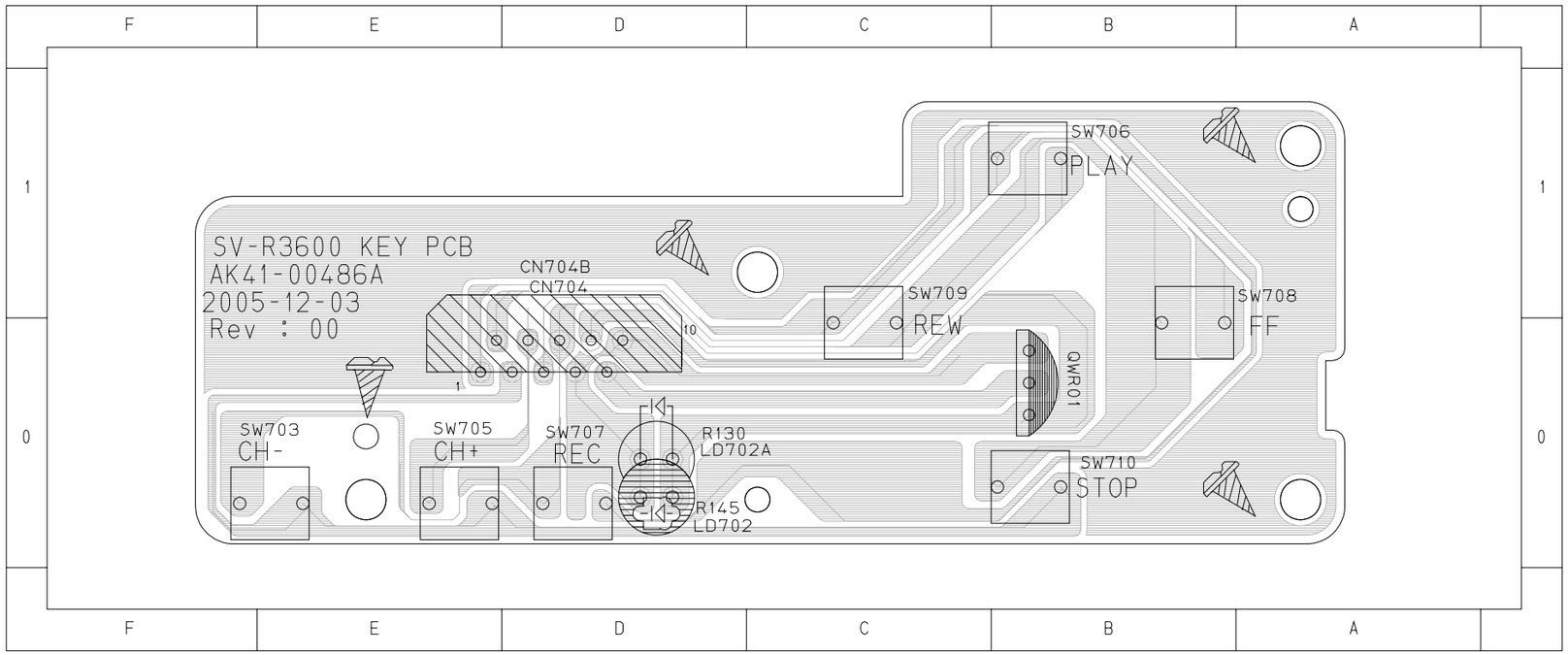


CONDUCTOR SIDE

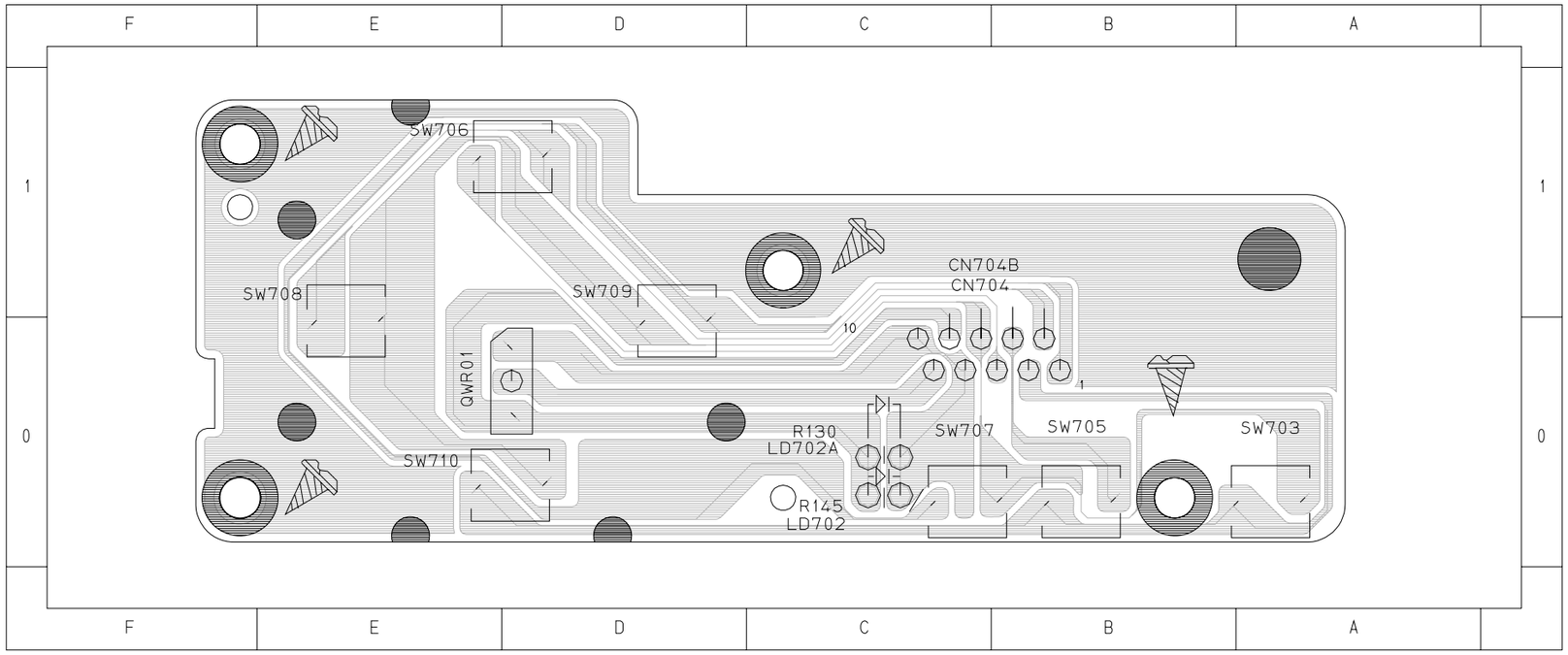


10-3 Key PCB

COMPONENT SIDE

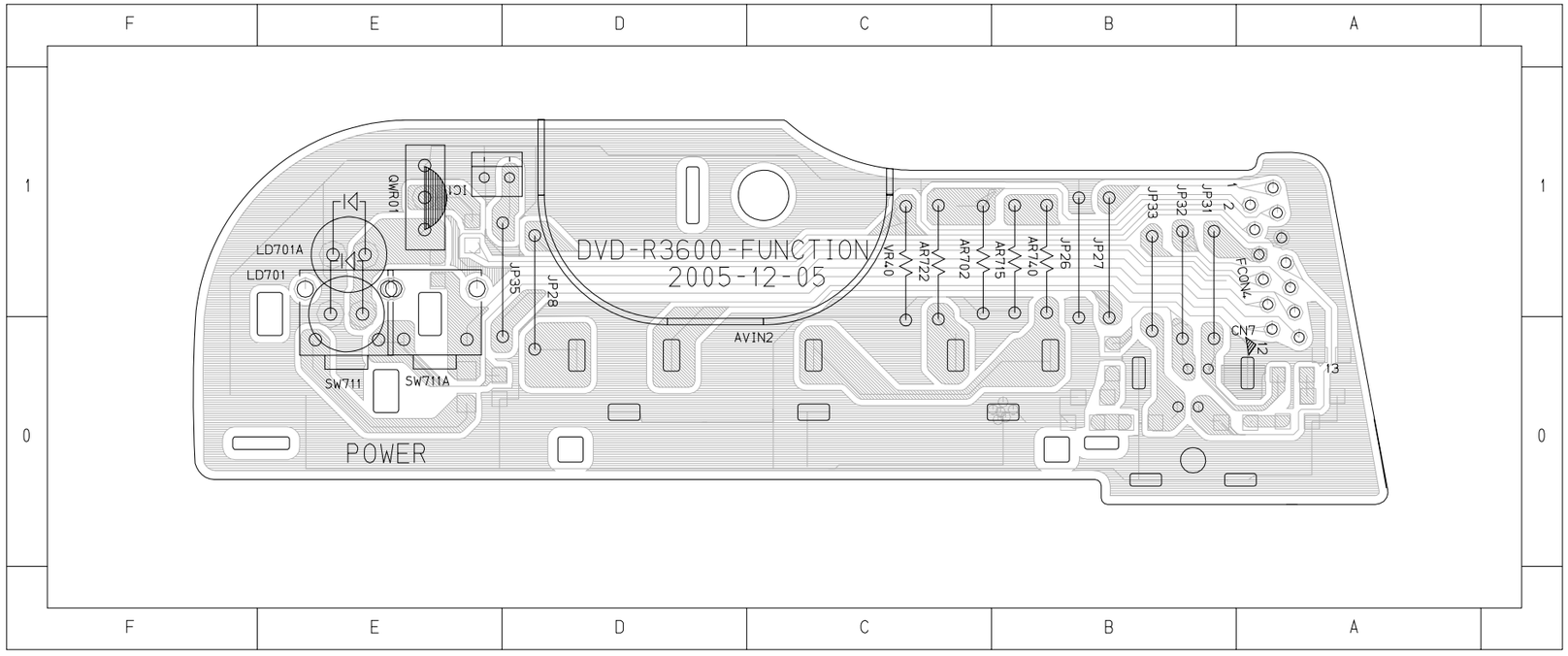


CONDUCTOR SIDE

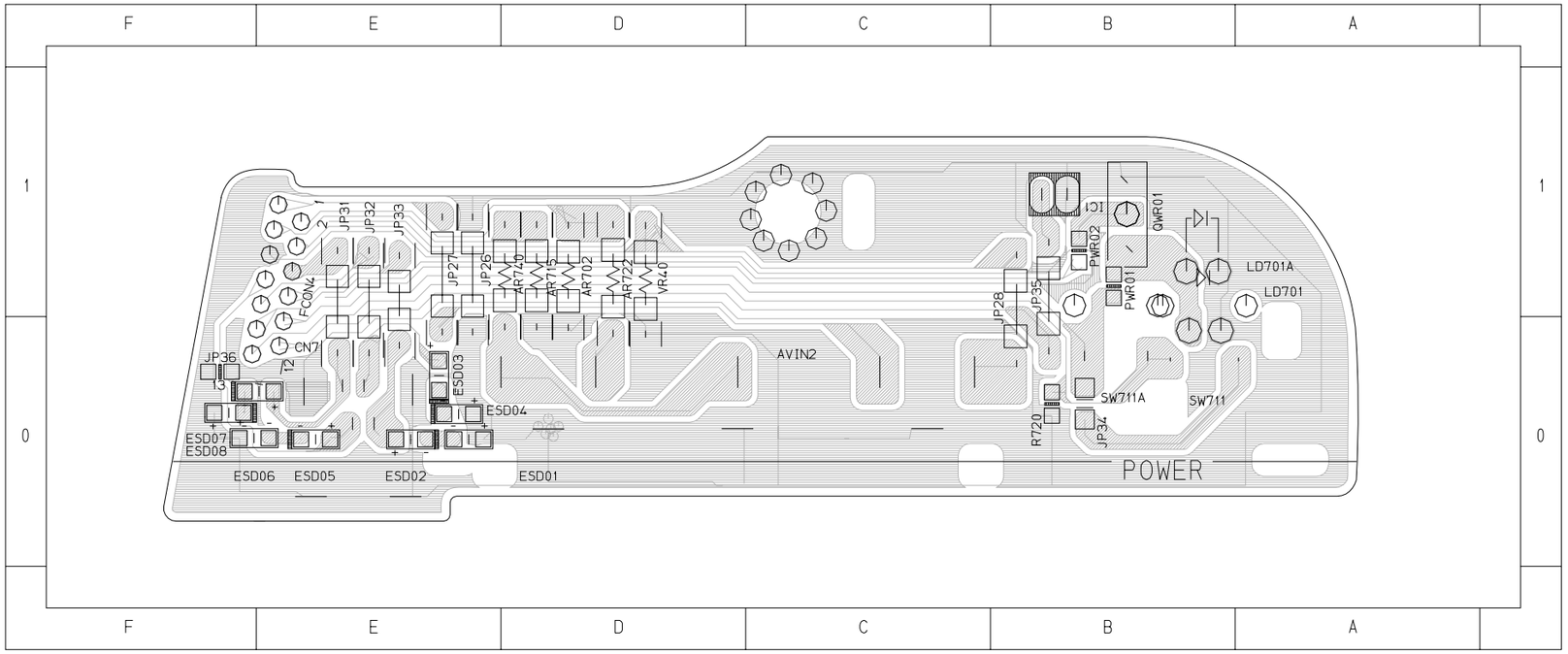


10-4 Sub PCB

COMPONENT SIDE



CONDUCTOR SIDE



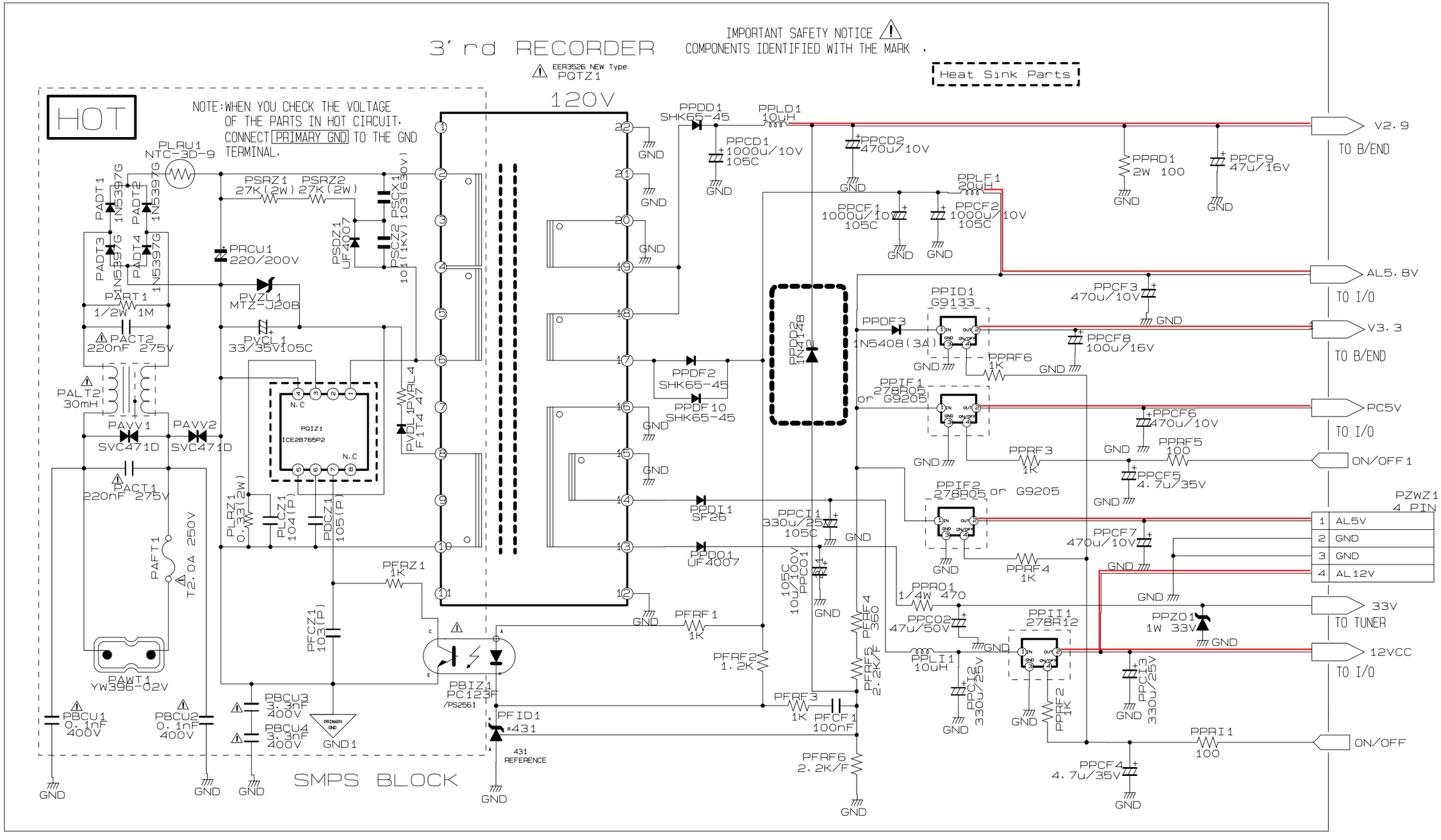
MEMO

11. Schematic Diagrams

11-1 S.M.P.S (Jack PCB) - - -

11-1 S.M.P.S (Jack PCB)

— Power



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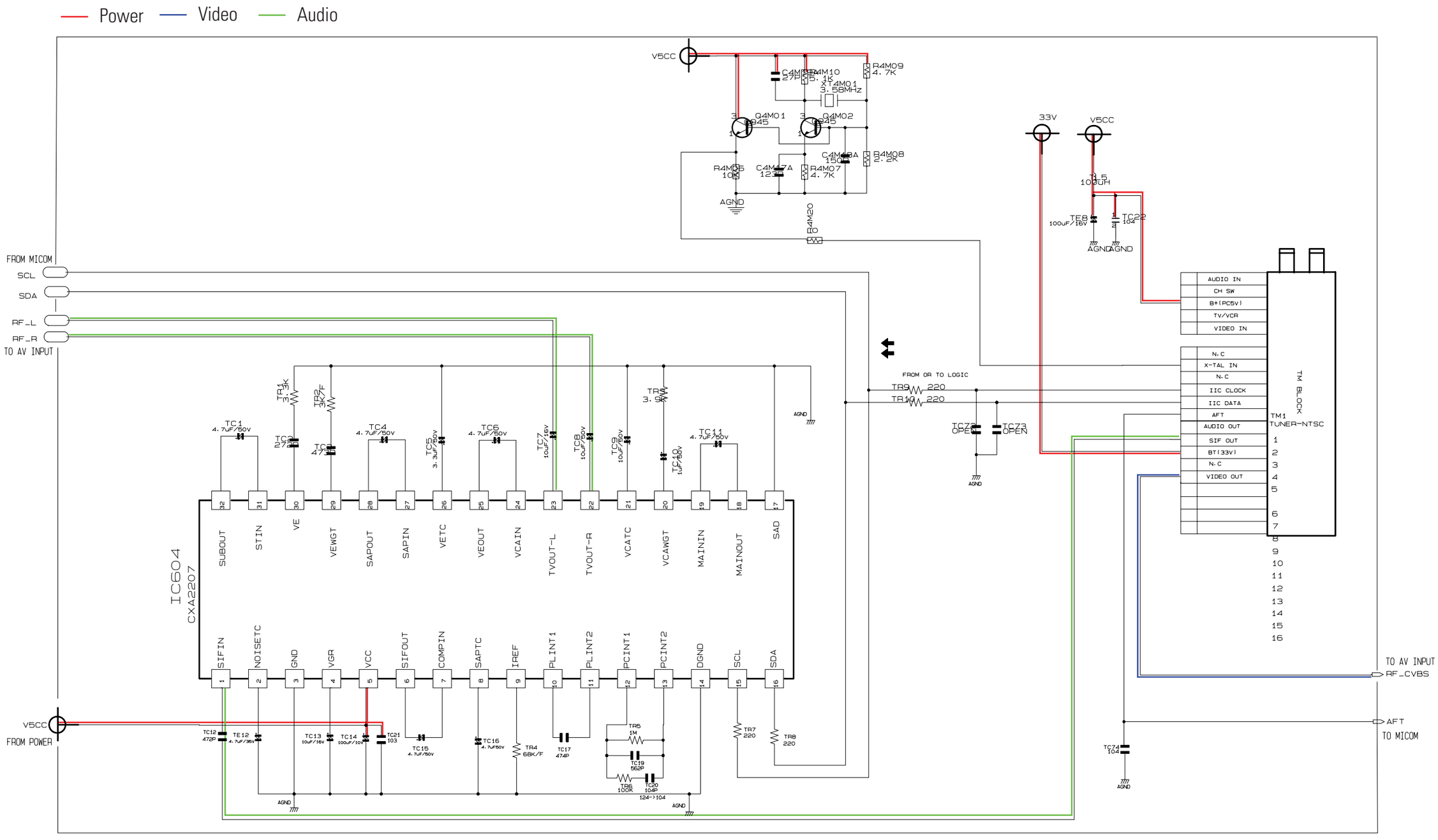
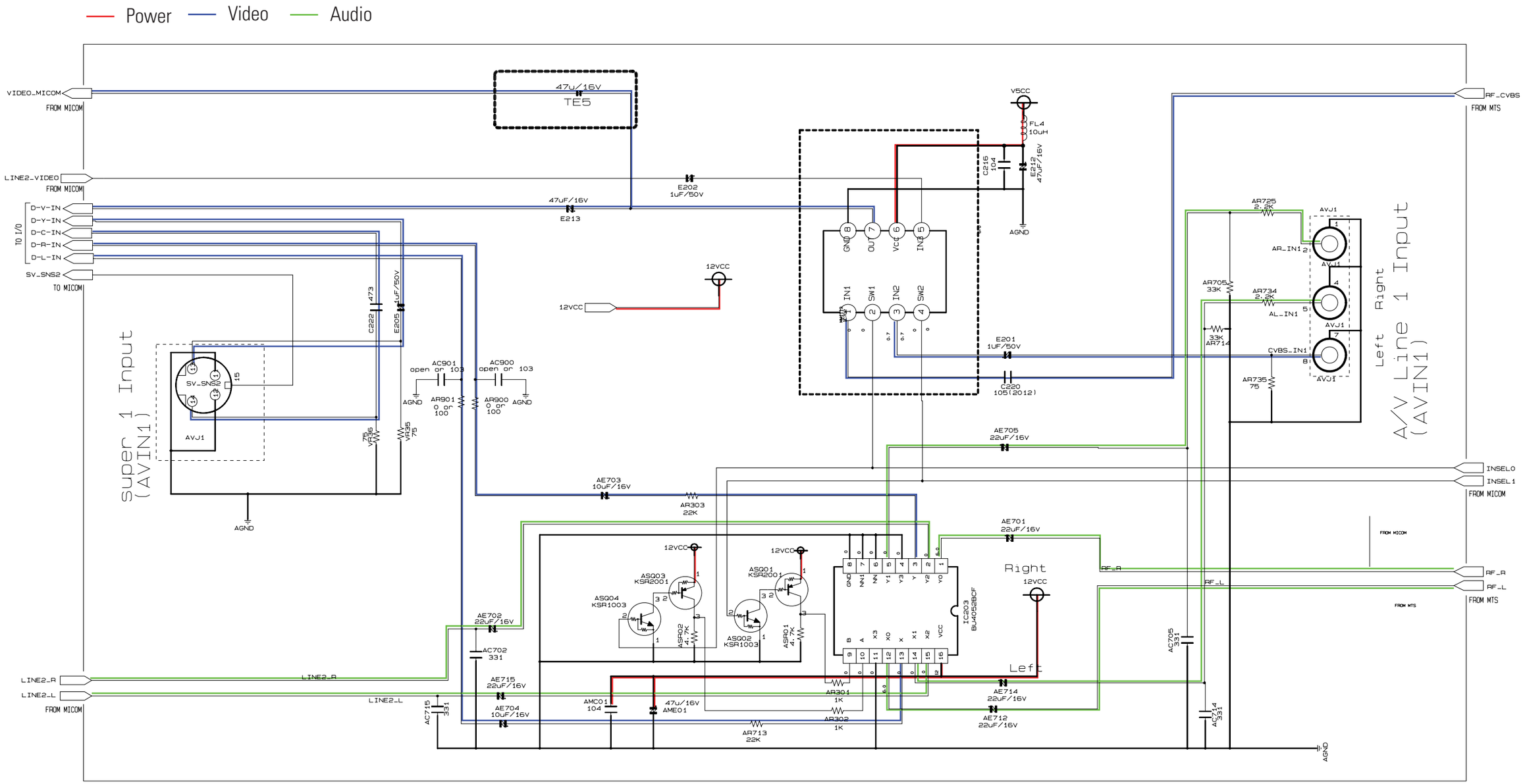
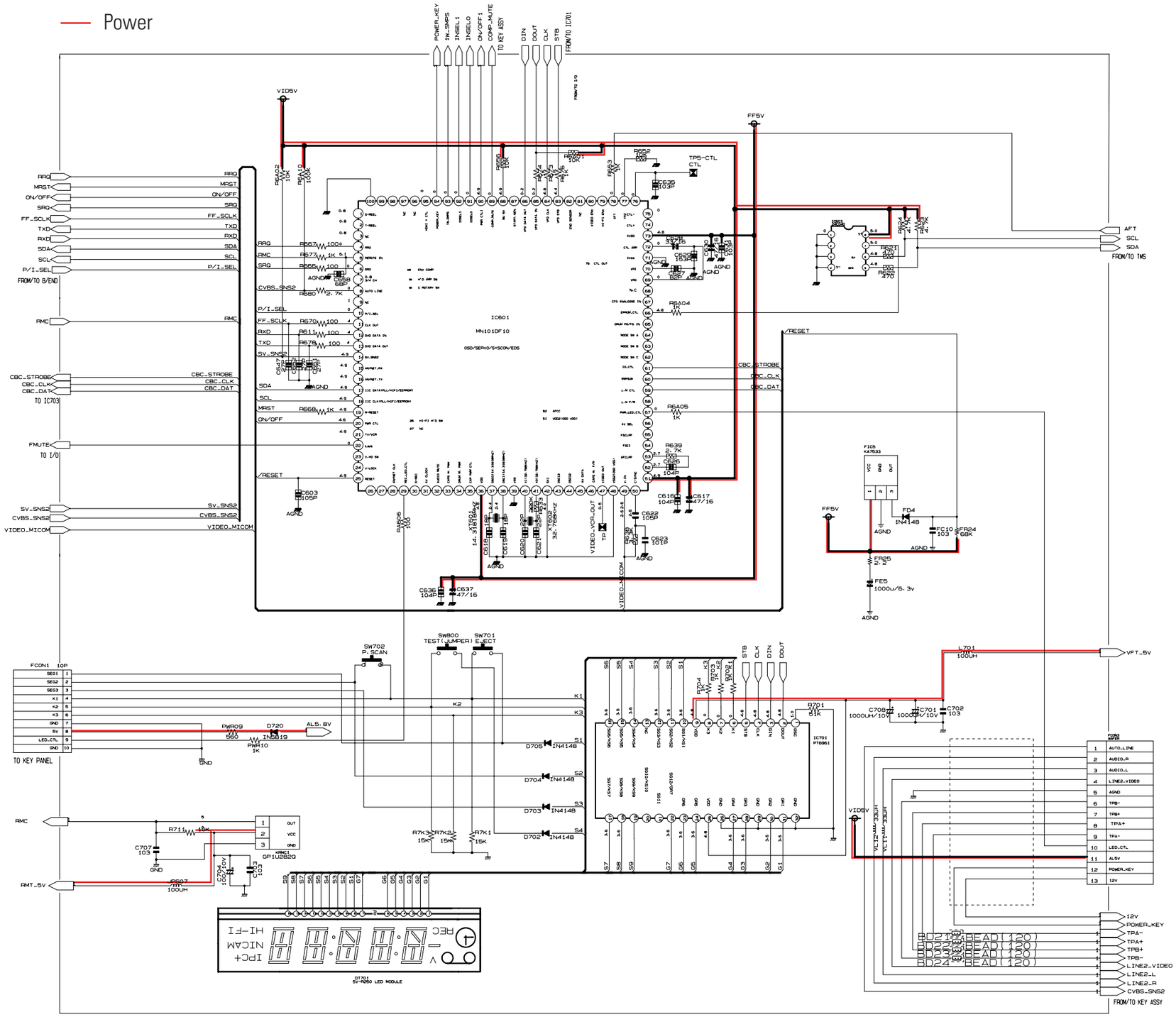
11-2 TM Block (Jack PCB)



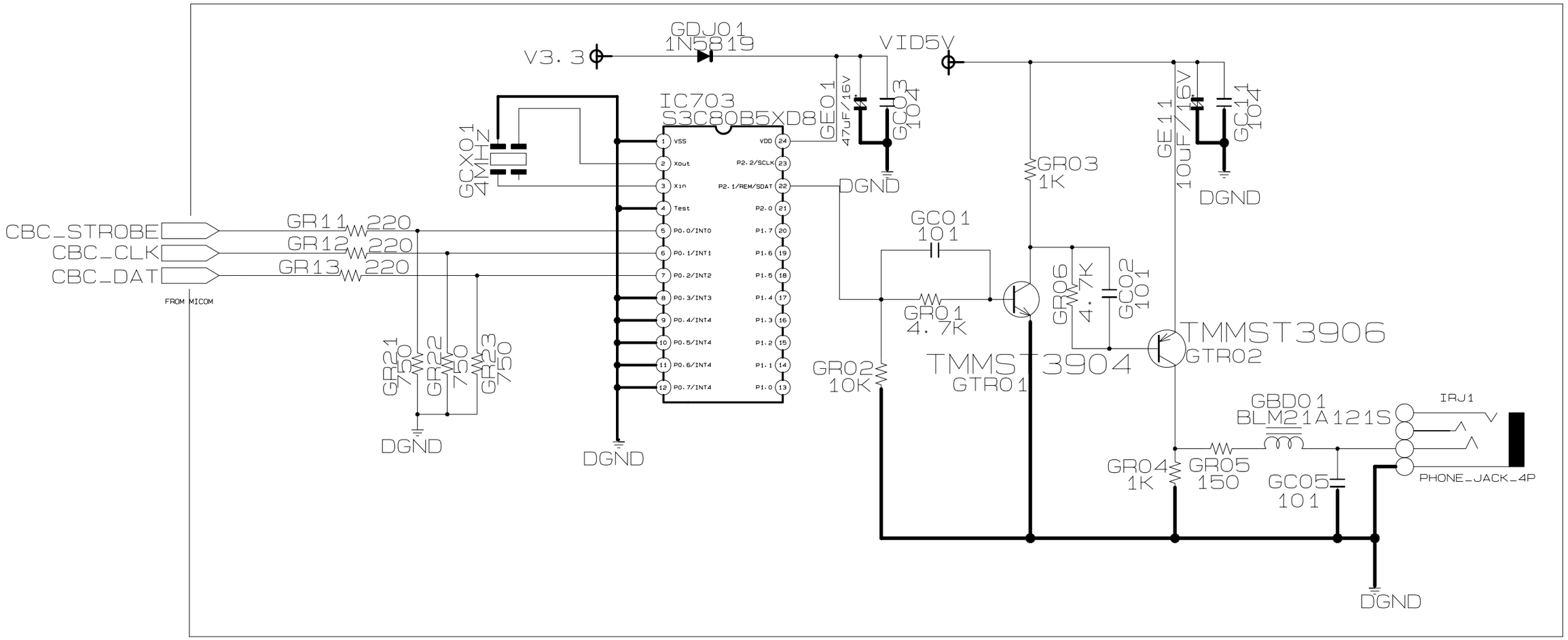
11-3 AV Input (Jack PCB)



11-4 Micom (Jack PCB)



11-5 CBS Function Block (Jack PCB)



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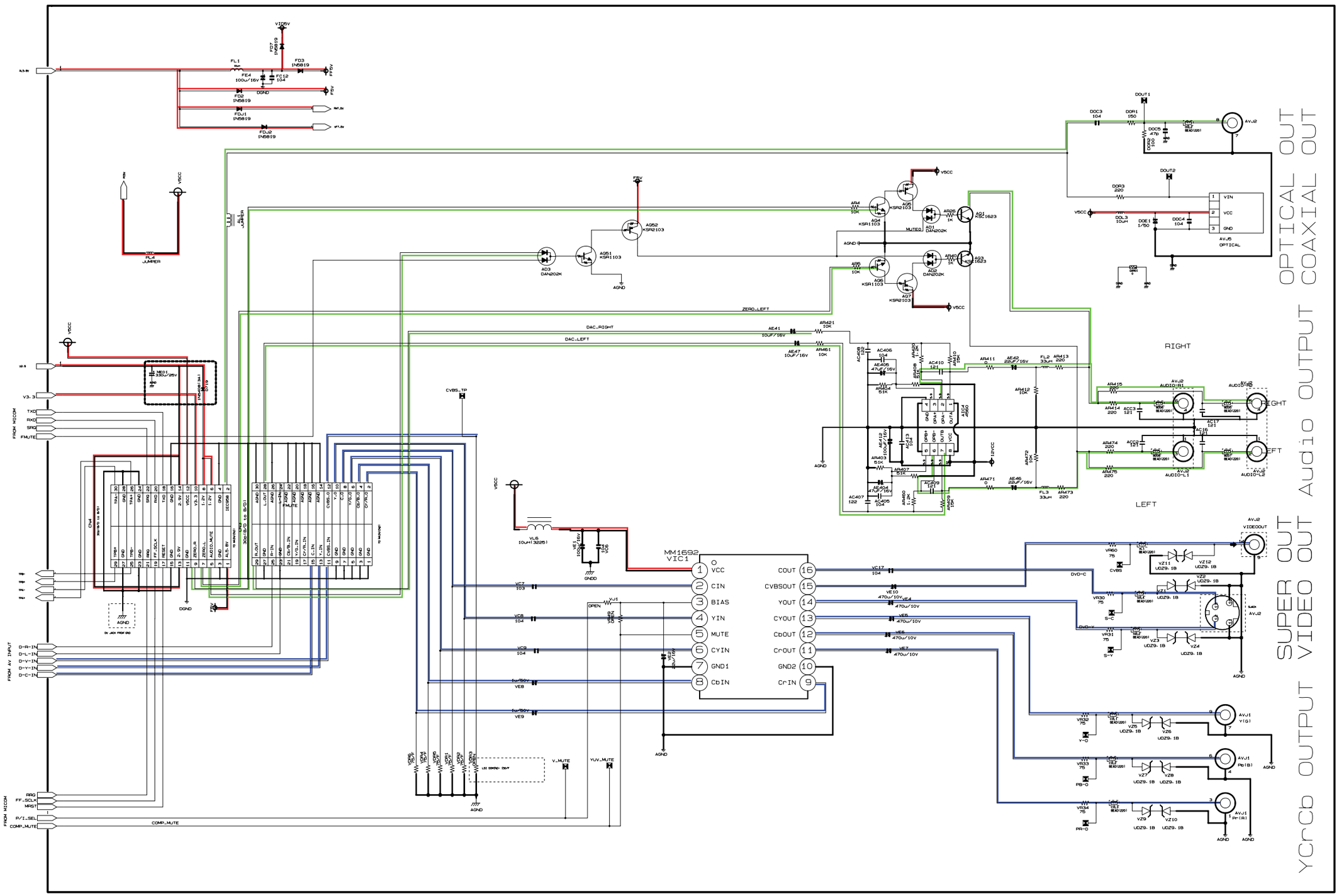
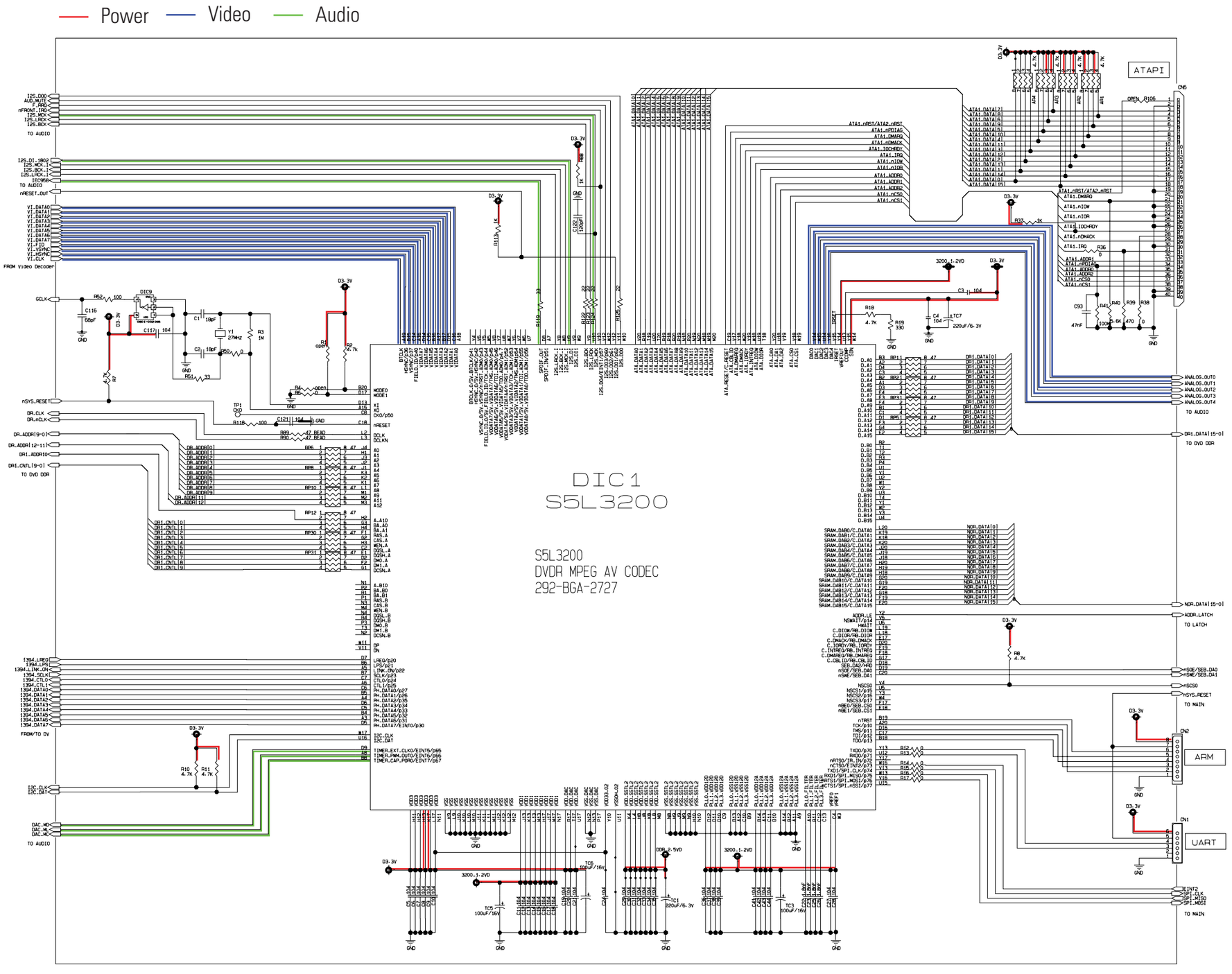
11-6 I/O (Jack PCB)

Power Video Audio



11-7 AV Codec (Main PCB)



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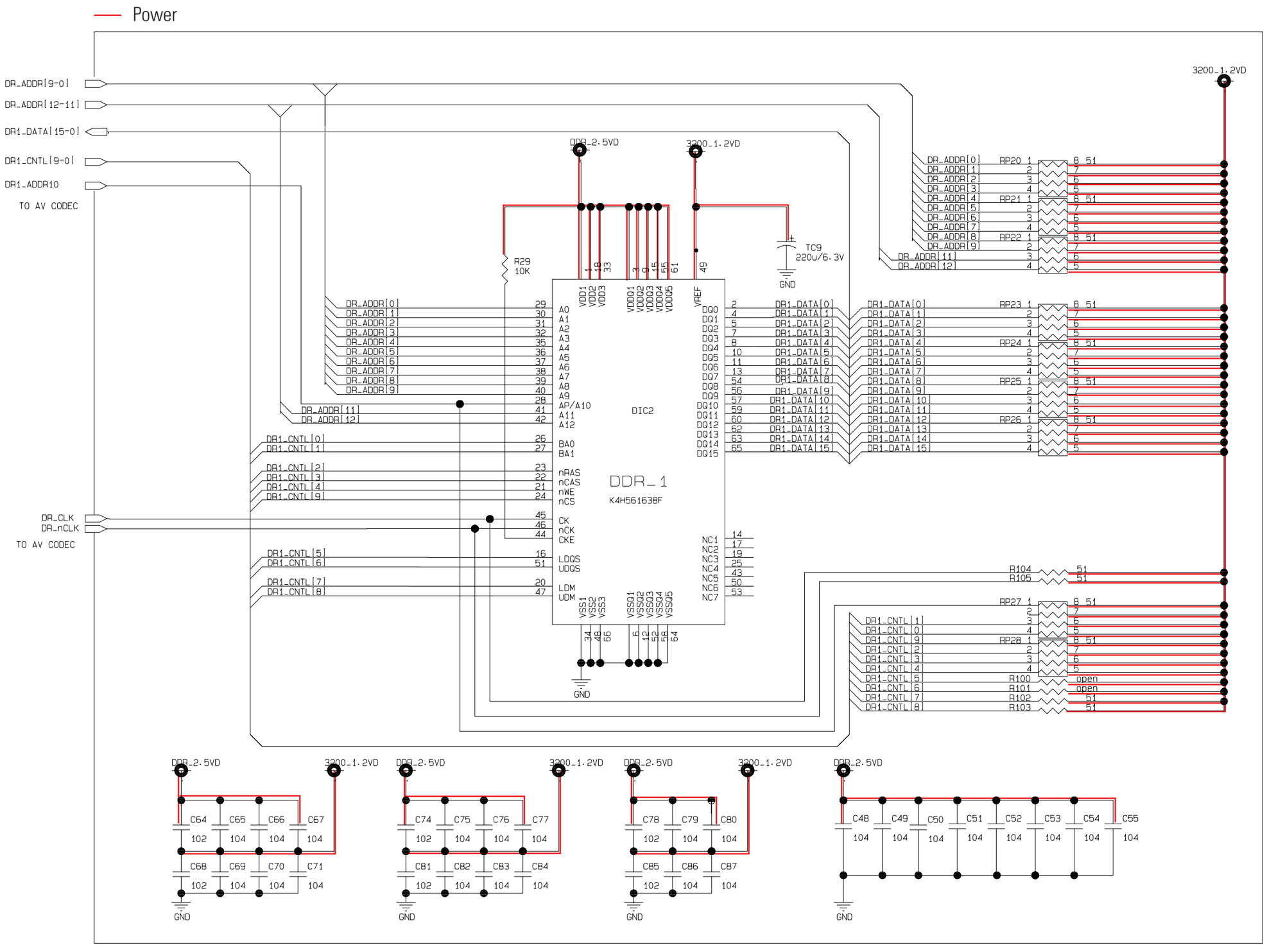
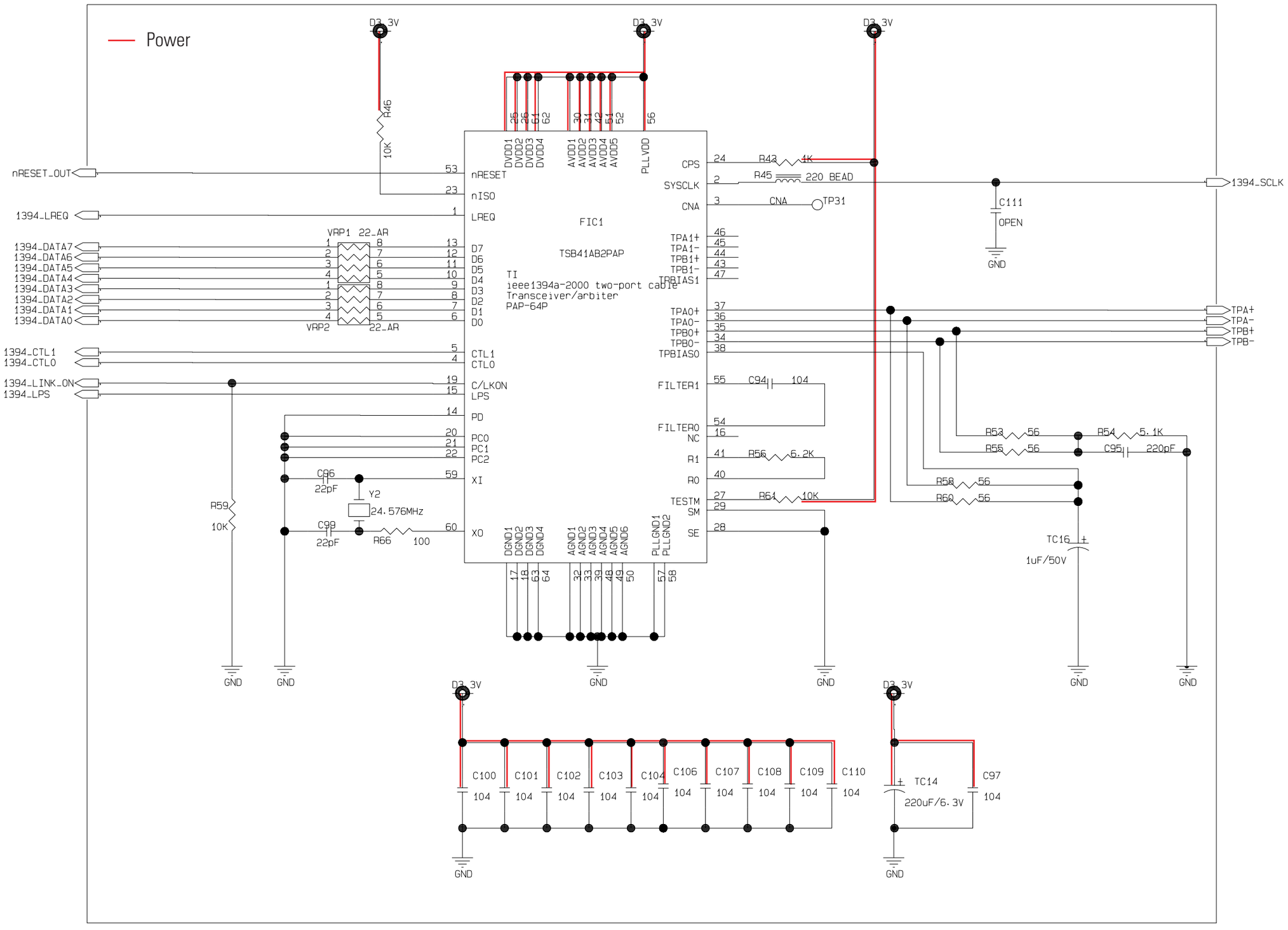
11-8 DDR (Main PCB)



11-9 DV_1394 (Main PCB)



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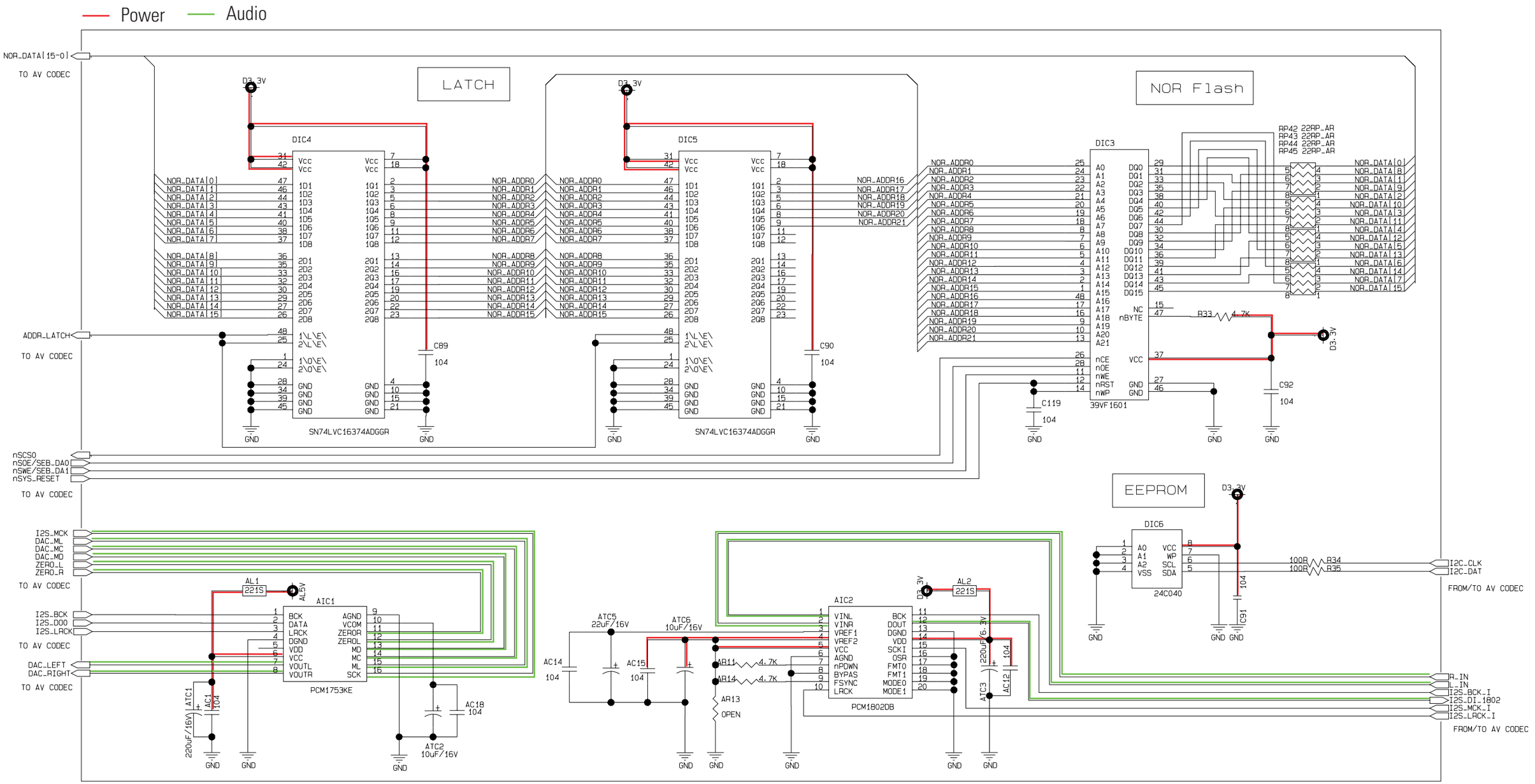
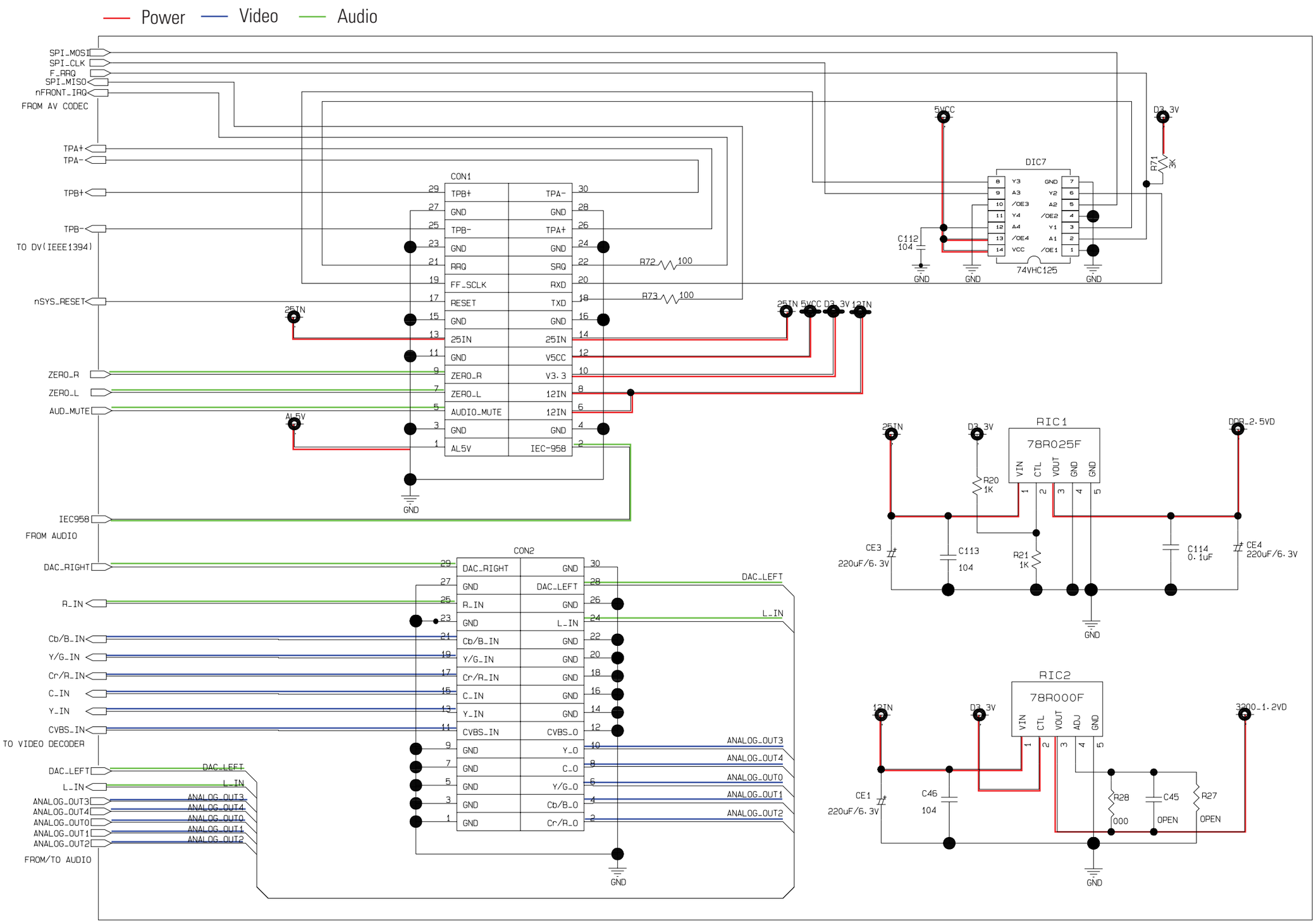
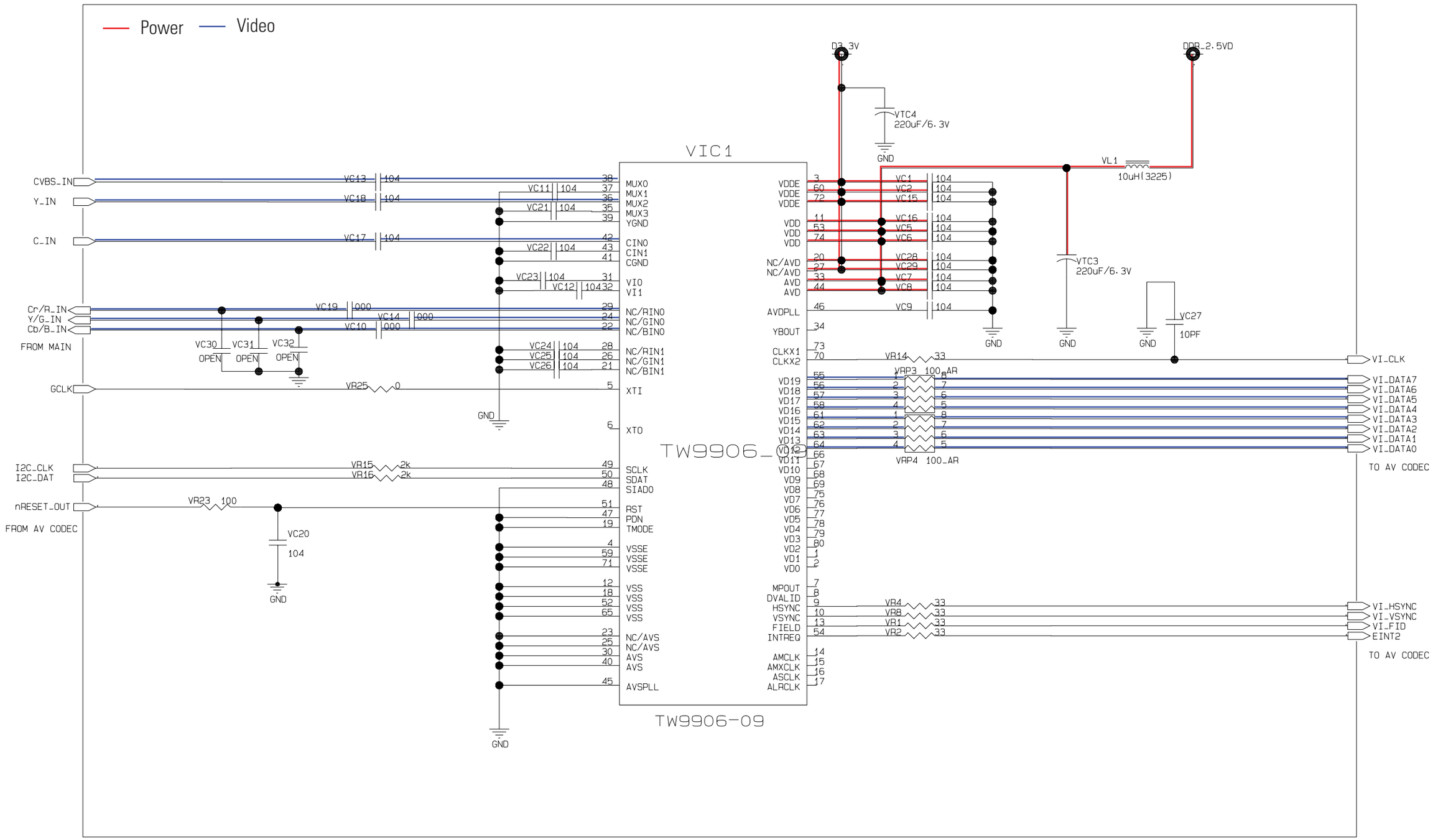
11-10 Latch And Audio (Main PCB)



11-11 Main Connector (Main PCB)

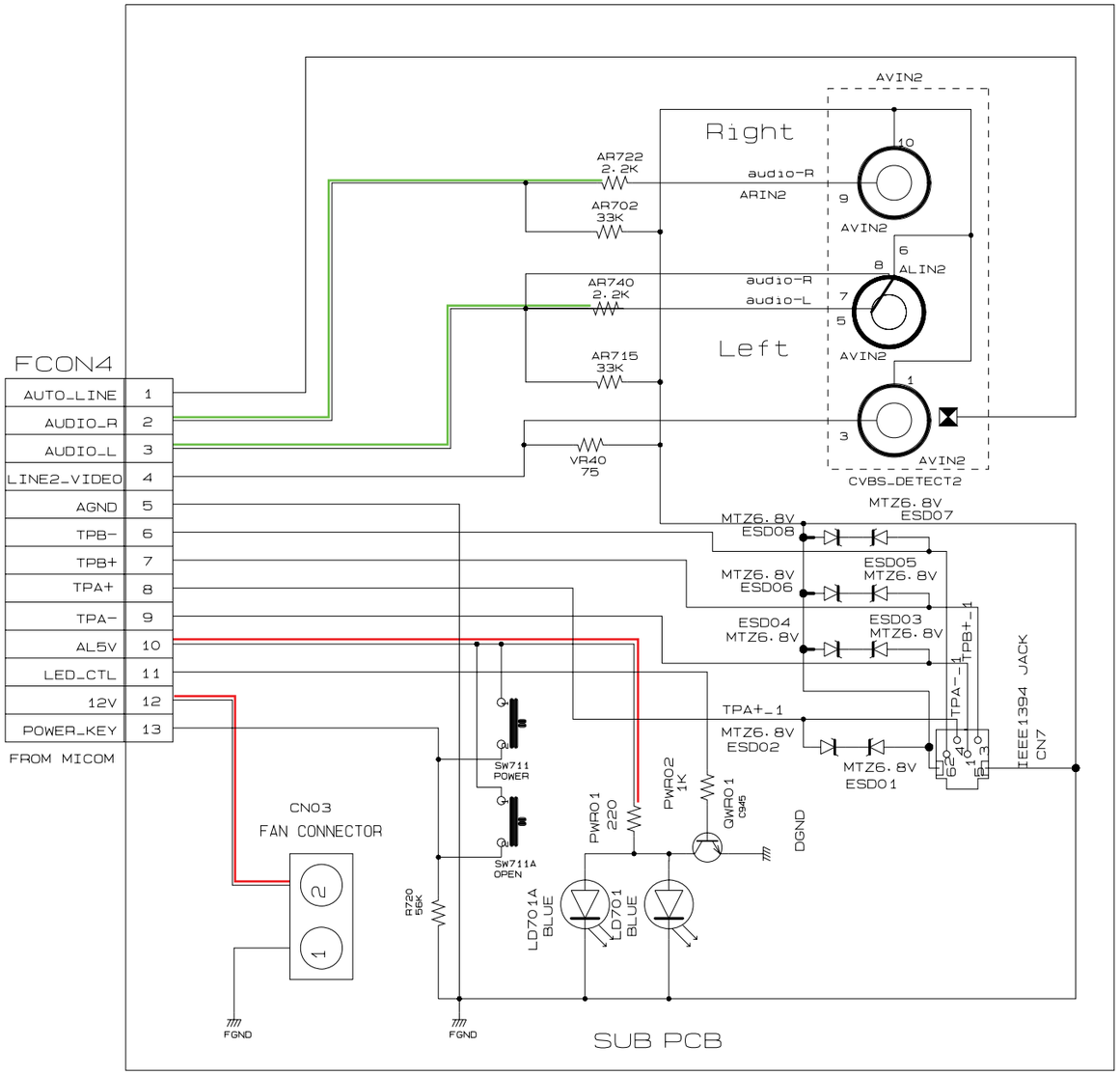


11-12 Video Decoder (Main PCB)



11-13 Sub and Key (Sub and Key PCB)

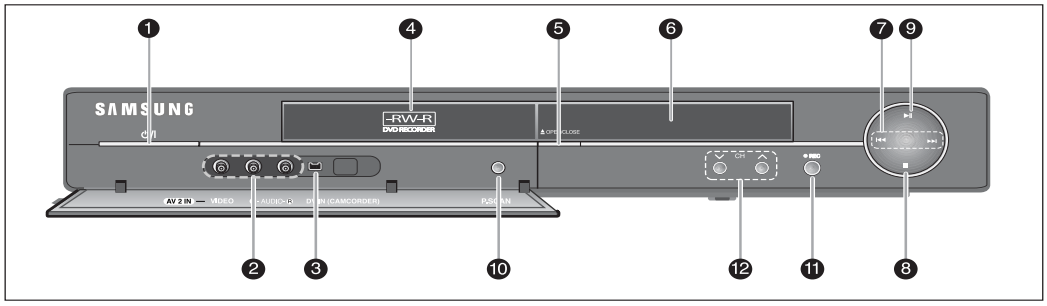
Power Audio



This Document can not be used without Samsung's authorization.

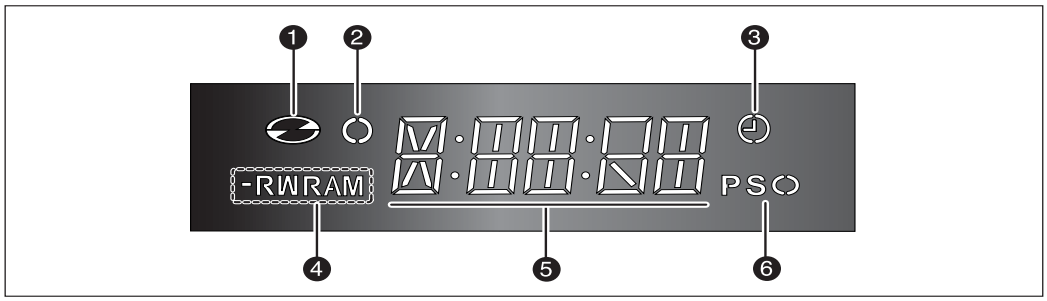
Description

Front panel



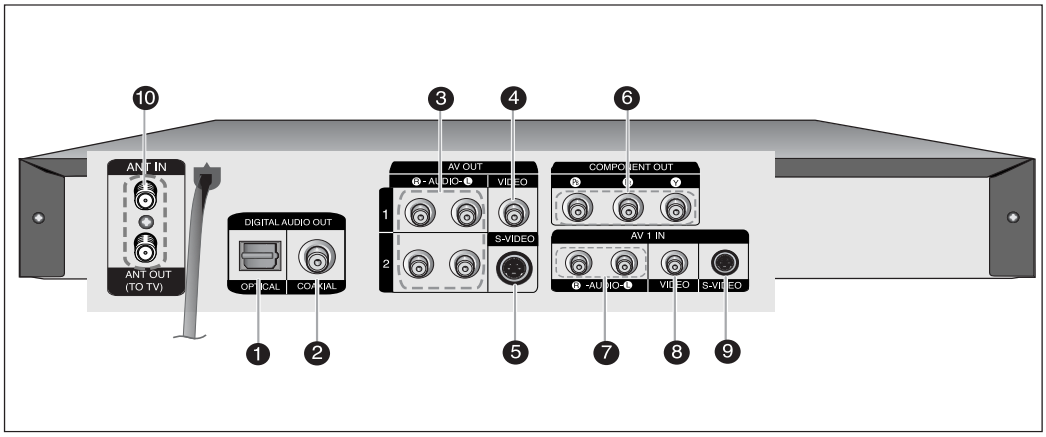
1. POWER
Turns the recorder on and off.
2. AV 2 IN
Connect external equipment.
3. DV-IN
Connects external digital equipment with a DV jack. (such as a camcorder)
4. DISC TRAY
Opens to accept a disc.
5. OPEN/CLOSE
Opens and closes the disc tray.
6. DISPLAY
Displays the playing status, time, etc.
7. SEARCH
Go to the next title/chapter/track, or goes back to the previous title/chapter/track.
8. STOP
Stops disc playback.
9. PLAY/PAUSE
Plays a disc or pauses playback.
10. P.SCAN
Selects the progressive scan mode.
11. REC
Starts recording.
12. CH (∨∧)
Select TV channels.

Front Panel Display



1. Lights when a disc is loaded.
2. Lights in the record mode.
3. Lights to indicate the timer record mode.
4. Lights when a DVD-R/-RW/-RAM disc is loaded.
5. Alpha/Numeric display.
6. Lights in the progressive scan mode.

Rear Panel



1. **DIGITAL AUDIO OUT(OPTICAL)**
   Connects to an amplifier having a digital optical audio input jack.
2. **DIGITAL AUDIO OUT(COAXIAL)**
   Connects to an amplifier having a digital coaxial audio input jack.
3. **AV AUDIO OUT**
   Connect to the audio input of external equipment using audio cables.
4. **AV VIDEO OUT(good video quality)**
   Connects the input of external equipment using a Video cable.
5. **AV S-VIDEO OUT(better video quality)**
   Connects the input of external equipment using an S-Video cable.
6. **COMPONENT VIDEO OUT(best video quality)**
   Connect to equipment having Component video input jacks.
7. **AV 1 AUDIO IN**
   Connect the output of external equipment using audio cables
8. **AV 1 VIDEO IN**
   Connects the output of external equipment using a video cable.
9. **AV 1 S-VIDEO IN**
   Connects the output of external equipment using an S-Video cable.
10. **ANT IN/ANT OUT (TO TV)**
    Connect antenna cables.

NOTE

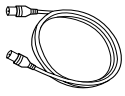
- The Antenna connection does not pass audio/video signals. To watch a DVD on your TV, you must connect audio/video cables.

Unpacking

Accessories

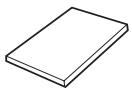
Check for the supplied accessories below.

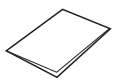
Video/Audio Cable
(AC39-00073A)


RF Cable for TV
(AC39-42001J)

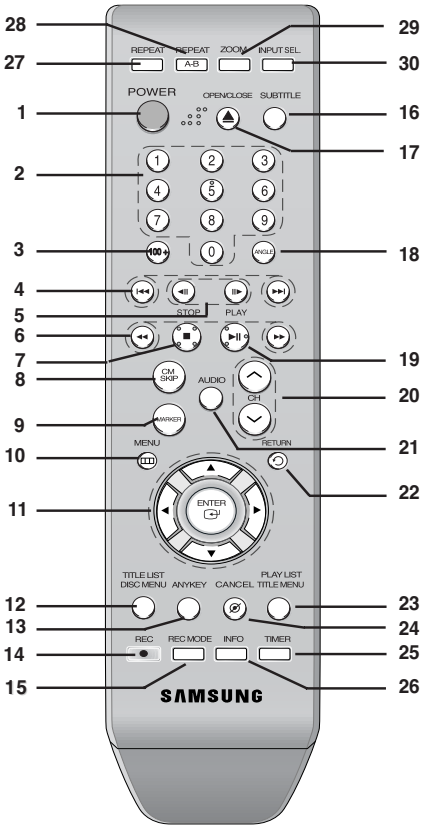
Remote Control
(AK59-00055A)

Batteries for Remote Control (AAA Size)
(AC43-12002H)


Instruction Manual
(AK68-01002A)


Quick Guide
(AK68-01013A)

Tour of the Remote Control



1. POWER Button

2. NUMBER Buttons

3. 100+ Button
Press this to select channel 100 or higher.

4. REVERSE/FORWARD SKIP Buttons
Press to skip a disc backwards or forwards.

5. REVERSE/FORWARD STEP Buttons
Press to play frame by frame.

6. REVERSE/FORWARD SEARCH Buttons
Press to search a disc backwards or forwards.

7. STOP Button
Press to stop a disc or to stop the recording.

8. CM SKIP Button
The unit can be set to automatically skip a portion of the program during playback of a DVD disc.

9. MARKER Button
Use this to bookmark or mark a position while playing a disc.

10. MENU Button
Brings up the DVD recorder's setup menu.

11. ENTER/DIRECTION Buttons
(UP/DOWN and LEFT/RIGHT Buttons)
This button functions as a toggle switch.

12. TITLE LIST/DISC MENU Button
Use this to enter the View Recording list/Disc menu.

13. ANYKEY Button
Use this to view the status of the disc that is being played.

14. REC Button
Use to make a recording on DVD-RW/-R discs.

15. REC MODE Button
Use this to set the desired Recording time and picture quality. (XP/SP/LP/EP)

16. SUBTITLE Button
Press this to switch the DVD's subtitle language.

17. OPEN/CLOSE Button
To open and close the disc tray.

18. ANGLE Button

19. PLAY/PAUSE Button
Press to play/pause a disc or pause the recording.

20. CH Button
Use this to select a TV channel.

21. AUDIO Button
Use this to access various audio functions on a disc.

22. RETURN Button

23. PLAY LIST/TITLE MENU Button
Use this to return to the Title menu, or to view the recorded Playlist.

24. CANCEL Button

25. TIMER Button
Press to directly enter the Timer Recording Mode menu.

26. INFO Button
This will display current setting or disc status.

27. REPEAT Button
Allows you to repeat a title, chapter, track or disc.

28. REPEAT A-B Button
Allows you to repeat a certain section.

29. ZOOM Button

30. INPUT SEL. Button
Selects line input signal in external input mode. (Tuner, AV1, AV2 or DV)

Connecting & Setting Up

This section involves various methods of connecting the DVD Recorder to other external components and setting required initial modes.

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Step 2 : Connecting the Video Cable 18
Step 3 : Connecting the Audio Cable 21
Step 4 : Connecting External Devices 24
Step 5 : Connecting the Power Cord 27
Step 6 : Preparing the Remote Control 27

Quick Overview

A Quick Overview presented in this guide will give you enough information to start using the recorder.

Step 1 : Connecting the Antenna Cable

▼

Step 2 : Connecting the Video Cable

▼

Step 3 : Connecting the Audio Cable

▼

Step 4 : Connecting External Devices

▼

Step 5 : Connecting the Power Cord

▼

Step 6 : Preparing the Remote Control

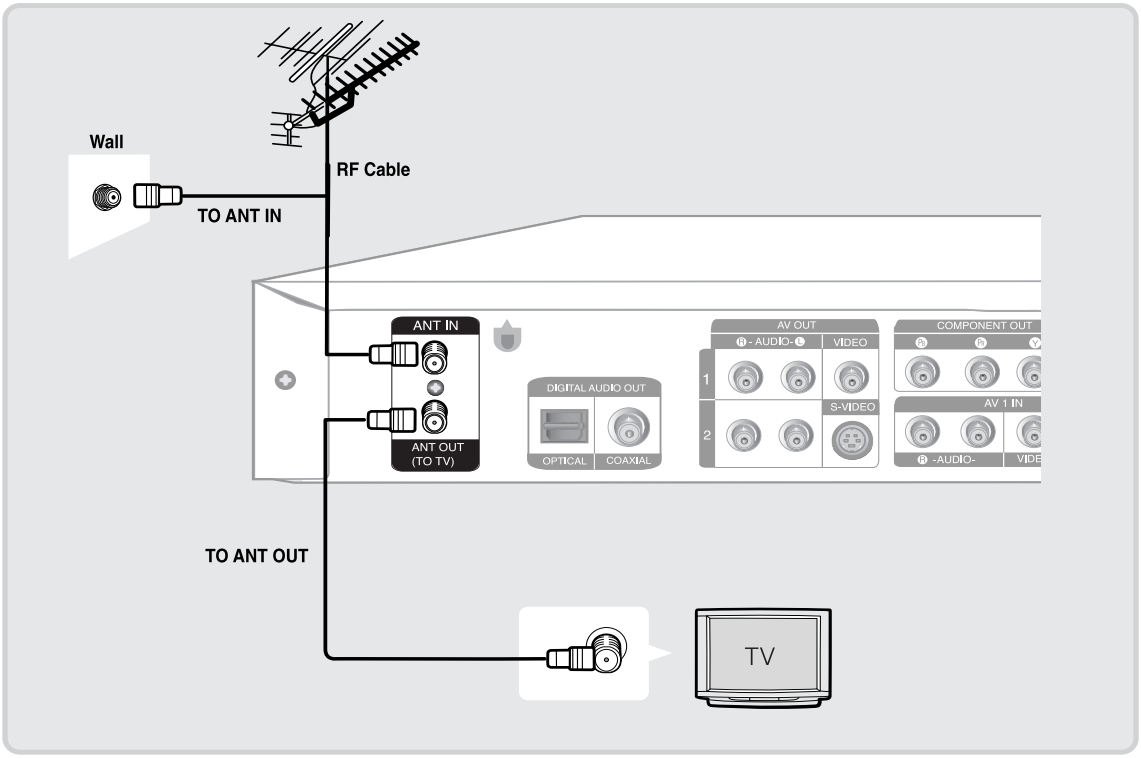
- ***Note to CATV system installer***: : This reminder is provided to call CATV system installer's attention to Article 820-40 of the National Electrical Code (Section 54 of Canadian Electrical Code, Part I), that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

Step 1: Connecting the Antenna Cable

There are several ways to connect your DVD Recorder. Select one of the Antenna connections on the following pages.

Antenna + DVD Recorder + TV : No Cable box

You can record non-scrambled channels by selecting the channel on the DVD Recorder. Also use this method if you watch channels without cable box.

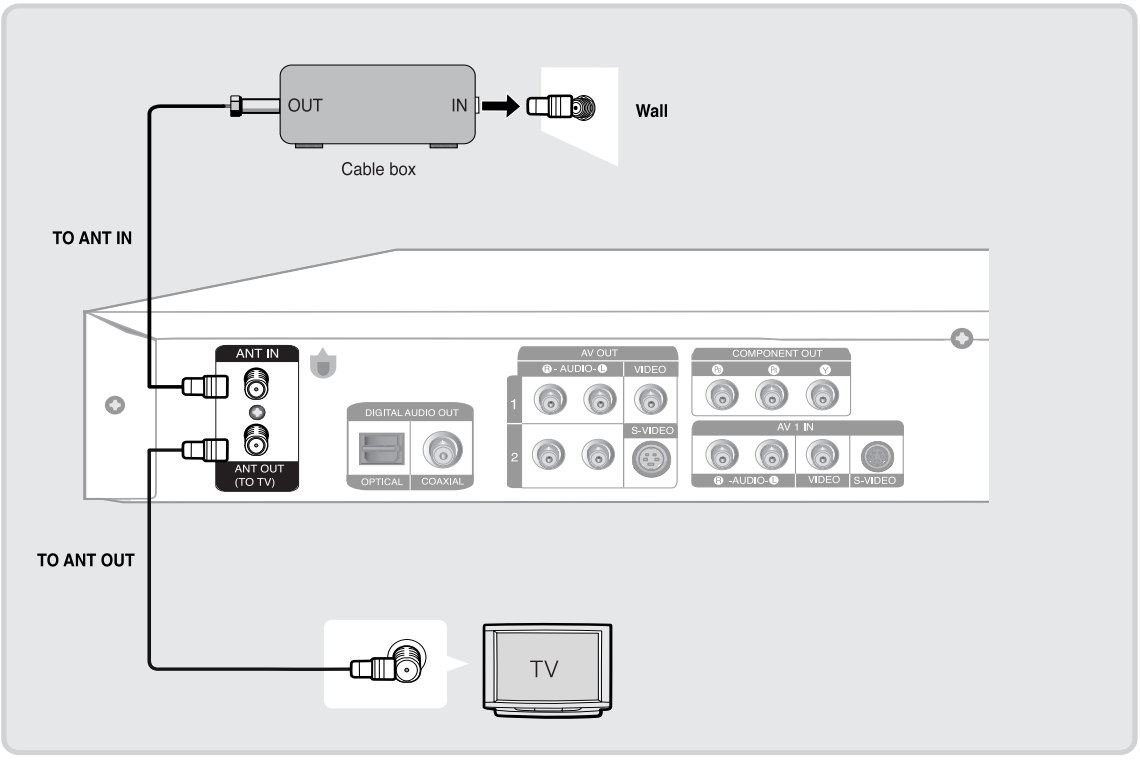


NOTE

- The VHF/UHF ANT (RF) OUT jack of this product sends only signals received through the antenna. It does not output Audio/Video signals. You must connect Audio/Video cables to view Video from the unit.
  (i.e. DVD playback)

Antenna + Cable box + DVD Recorder + TV : Cable box with many scrambled channels

You can record channels by selecting the channel on the cable box. You cannot record one channel while watching another channel. Be sure that the cable box is turned on.

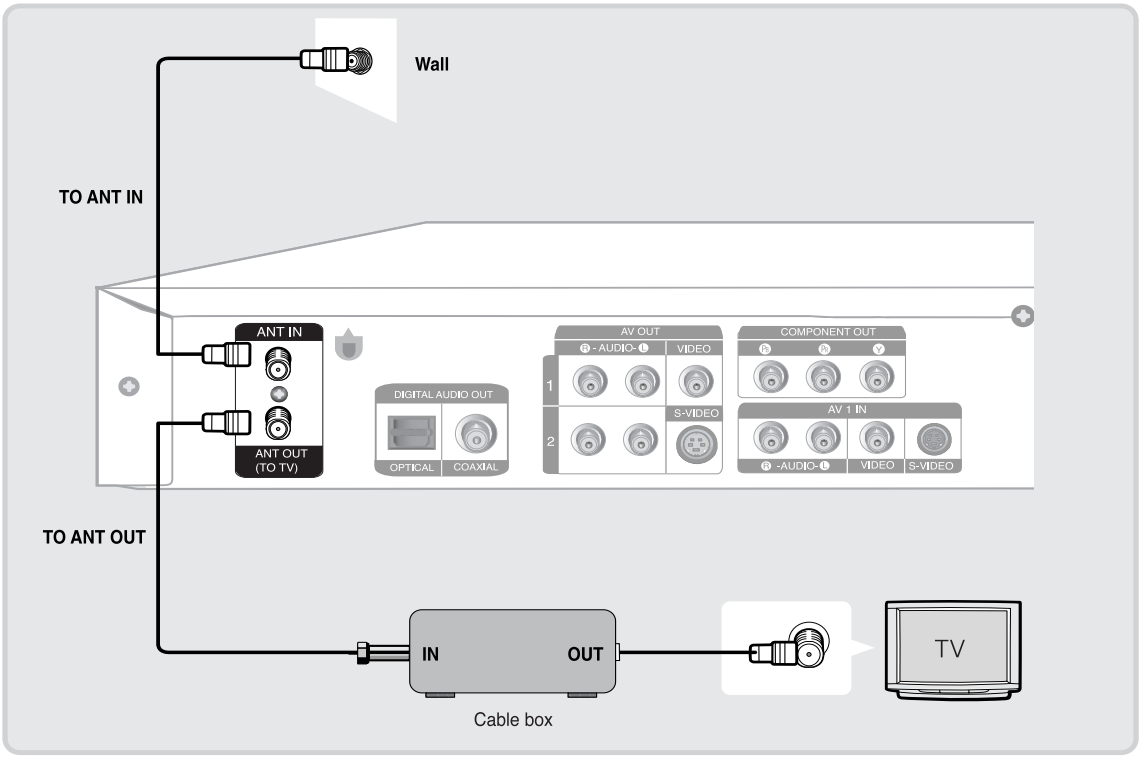


NOTE

- The VHF/UHF ANT (RF) OUT jack of this product sends only signals received through the antenna. It does not output Audio/Video signals. You must connect Audio/Video cables to view Video from the unit.
  (i.e. DVD playback)

Antenna + DVD Recorder + Cable box + TV : Cable box with a few scrambled channels

You can record non-scrambled channels by selecting the channel on the DVD Recorder. You cannot record scrambled channels that require a cable box.



NOTE

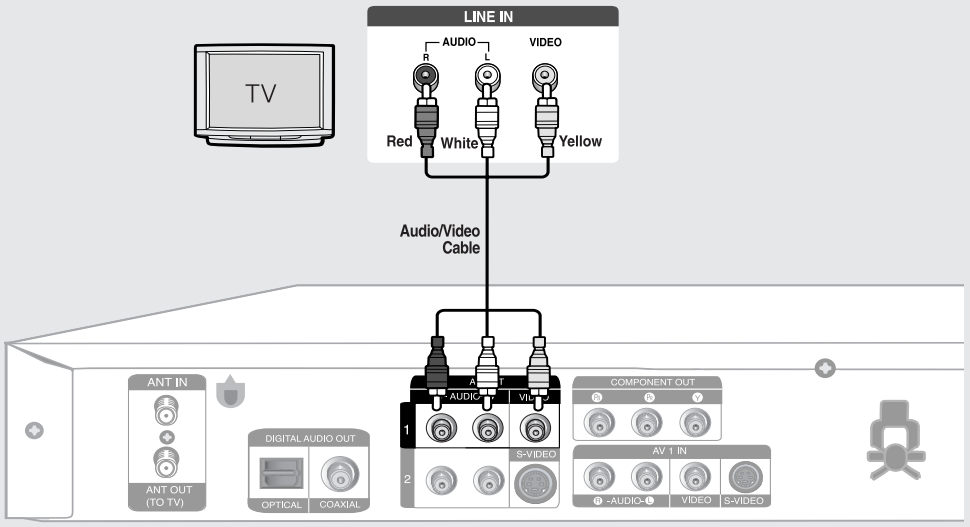
- The VHF/UHF ANT (RF) OUT jack of this product sends only signals received through the antenna. It does not output Audio/Video signals. You must connect Audio/Video cables to view Video from the unit.
  (i.e. DVD playback)

Step 2 : Connecting the Video Cable

There are several ways to connect your DVD Recorder. Select one of the video connections on the following pages. The VHF/UHF RF OUT jack of this product sends only signals received through the antenna. It does not output audio/video signals. You must use one of the following audio/video connections on this unit.

Connecting to a Video input jack

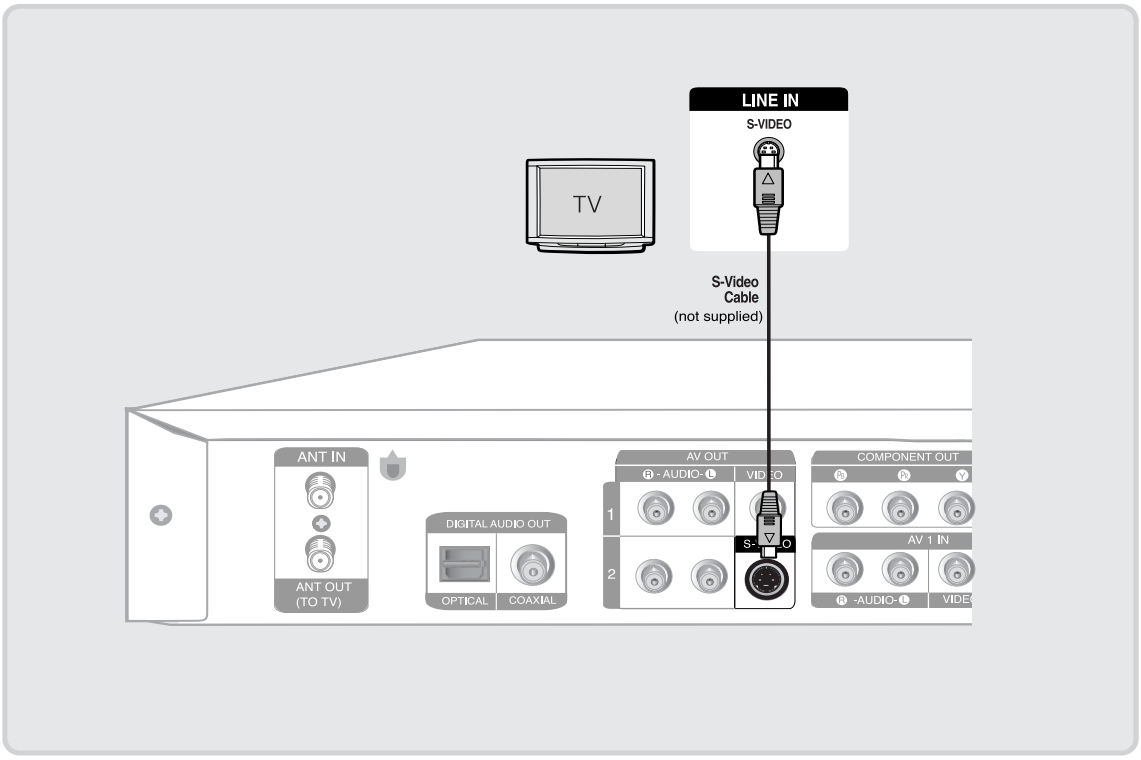
Connect a video(yellow) cable between the VIDEO(yellow) OUT jack on DVD Recorder and VIDEO(yellow) IN jack on the TV (or AV amplifier).



- You will enjoy normal quality images.
- Connect audio cables(white and red) between the AUDIO OUT jacks on the DVD Recorder and AUDIO IN jacks on your TV(or AV amplifier).
  (See pages 21 ~ 23)

Connecting to an S-Video input jack

Connect an S-Video cable(not supplied) between the S-VIDEO OUT jack on DVD Recorder and S-VIDEO IN jack on your TV (or AV amplifier).

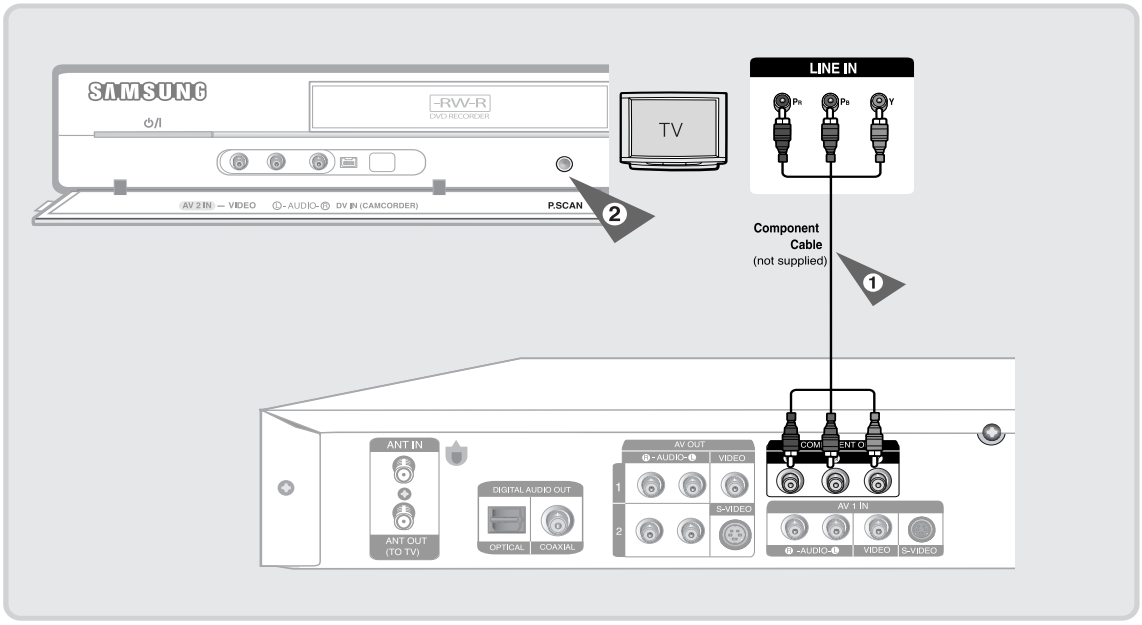


- You will enjoy high quality images. S-Video separates the picture element into black and white (Y) and color (C) signals to present clearer images than regular video input mode.
- Connect audio cables(white and red) between the AUDIO OUT jacks on the DVD Recorder and AUDIO IN jacks on TV(or AV amplifier).
  (See pages 21 ~ 23)

NOTE

- S-Video or Component video outputs are available only if your TV supports S-Video input or Component video input, respectively. If S-Video or Component video output does not work, check the TV connections and the TV input selection settings.

Connecting to Component video input jacks (Y,PB,PR)



1. Connect Component video cables(not supplied) between the COMPONENT OUT(Y,PB,PR) jacks on DVD Recorder and COMPONENT IN(Y,PB,PR) jacks on your TV (or AV amplifier).
2. If the connected TV supports Progressive Scan, press the P.SCAN button on the front of the DVD Recorder to enjoy best quality video. Pressing the **P.SCAN** button switches Progressive (480p) / Interlace (480i) scan mode in turn.

- You will enjoy best quality accurate color reproduction images. Component video separates the picture element into black and white(Y), blue(PB), red(PR) signals to present clear and clean images.
- Connect audio cables(white and red) between the AUDIO OUT jacks on the DVD Recorder and AUDIO IN jacks on TV(or AV amplifier).
(See pages 21 ~ 23)

NOTE

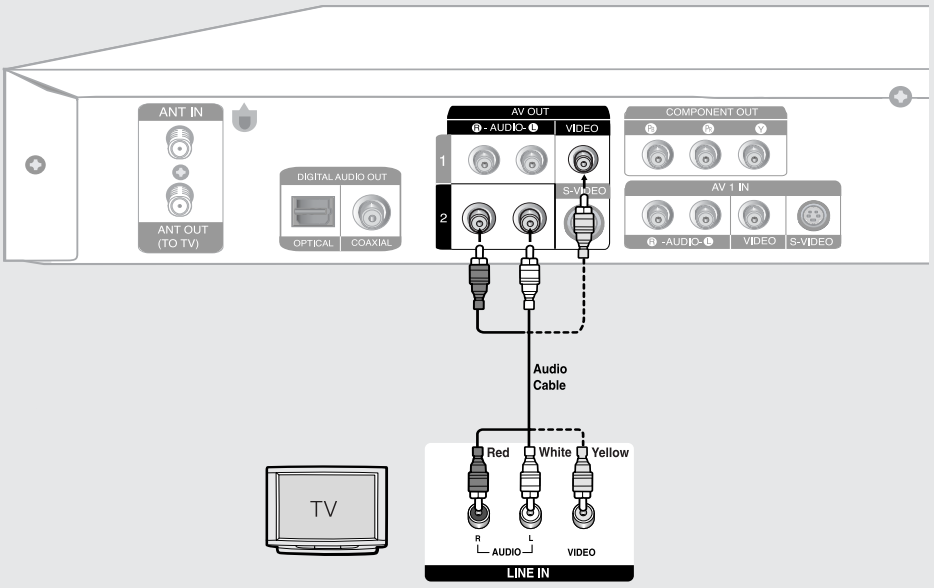
- Compared to standard interlaced video, progressive scan doubles the amount of video lines fed to your TV, resulting in a more stable, flicker-free, and clear image than interlaced video. The progressive scan video output jack is used in progressive output mode. This is only available with TVs that support progressive scan.
- Progressive Scan Output (480p).
  Not all high definition television sets are fully compatible with this product. If the 480p progressive scan picture is not satisfactory, press the **P.SCAN** button on the unit to switch to the Interlace mode. If there are questions regarding TV set compatibility with this model, please contact our customer service center at 1-800-SAMSUNG.

Step 3 : Connecting the Audio Cable

There are several ways to connect your DVD Recorder. Select one of the audio connections on the following pages.

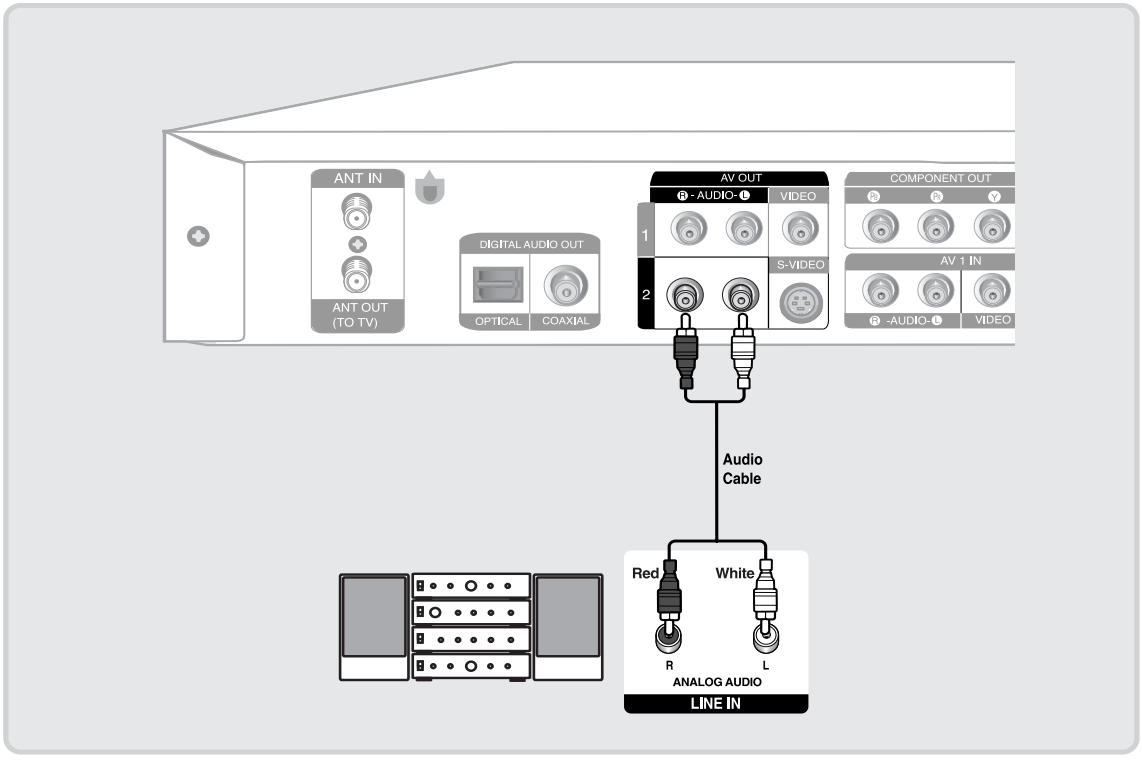
Connecting to your TV

This connection will use your TV's speakers.



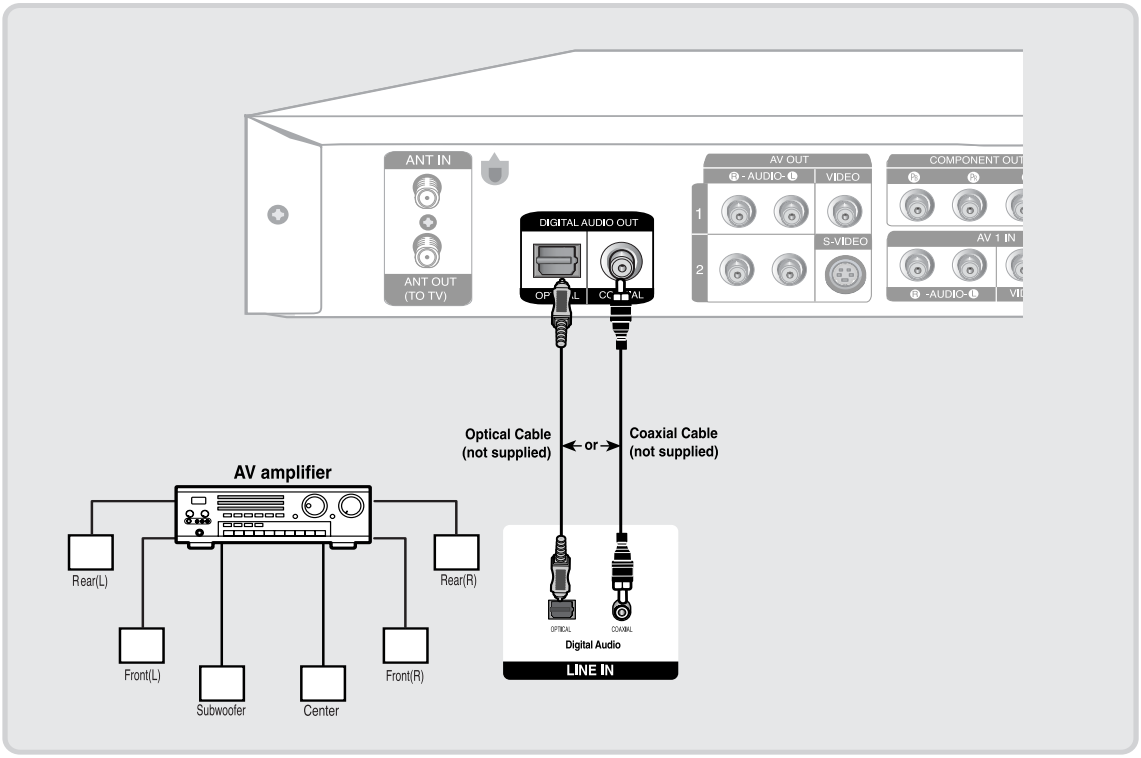
Connecting to a stereo amplifier with analog input jacks

If your stereo amplifier only has AUDIO INPUT jacks(L and R), use the AUDIO OUT jacks.



Connecting to an AV amplifier with a digital input jack

If your AV amplifier has a Dolby Digital or DTS decoder and a digital input jack, use this connection. To enjoy Dolby Digital or DTS sound, you will need to set up the audio settings. (See pages 32~33)



Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

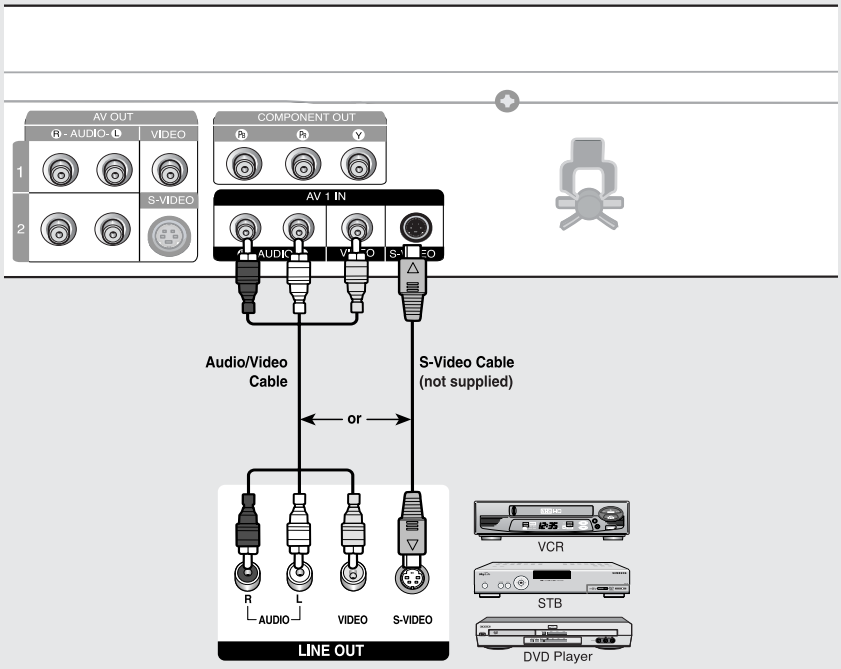
“DTS” and “DTS Digital Out” are trademarks of Digital Theater Systems, Inc.

Step 4 : Connecting External Devices

This allows you to connect your DVD Recorder to other external devices and view or record their outputs.

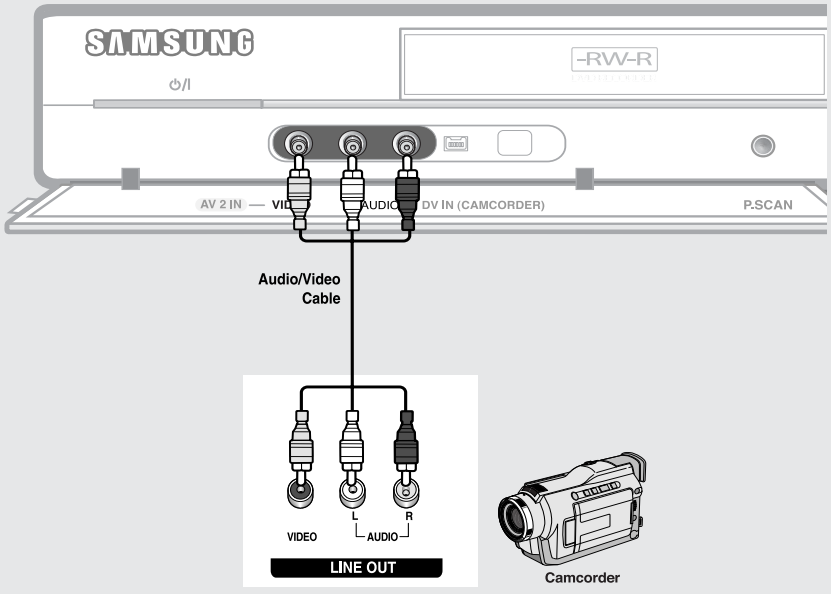
Connecting a VCR, Set-Top Box(STB) or DVD Player to the AV 1 IN jacks

Connecting a VCR or external device to the AV 1 IN jacks of the DVD Recorder.
You can record from connected equipment (VCR, STB or DVD Player).



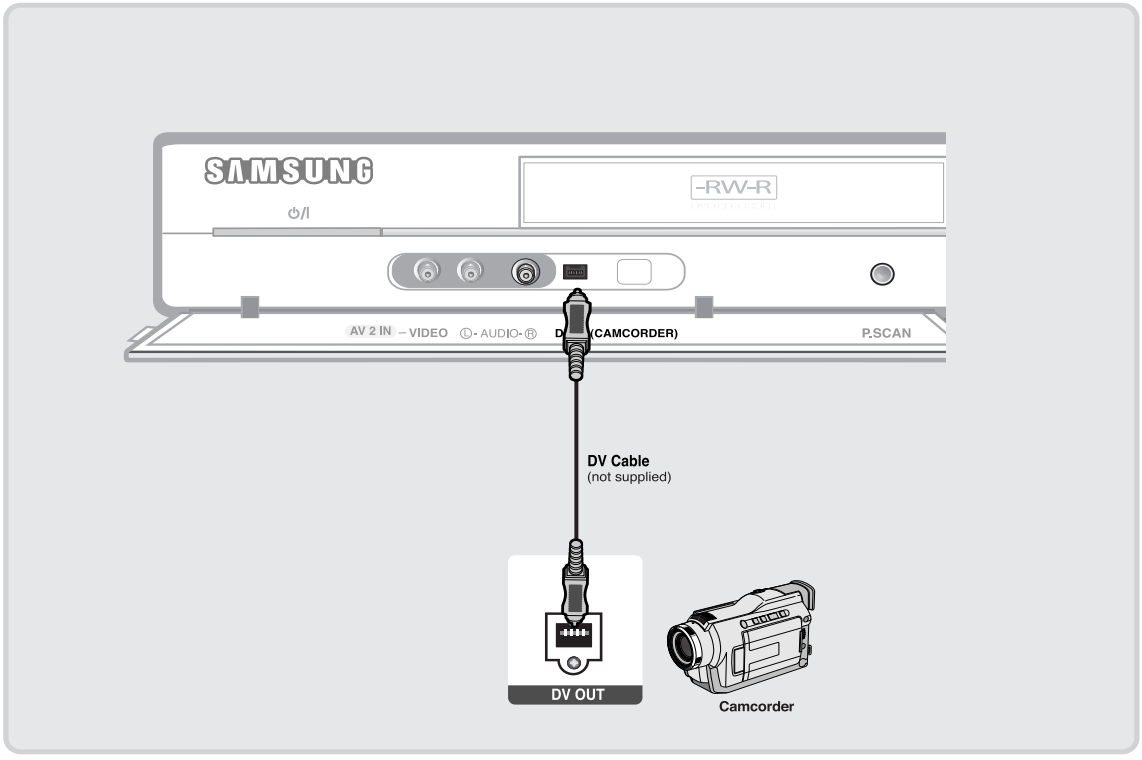
Connecting a Camcorder to the AV 2 IN jacks

You can also use the AV 2 IN jacks on the front panel of the DVD Recorder. You can record from connected equipment, such as a camcorder.
When an input source is inserted into AV 2 while watching TV, the input will be switched to AV 2 automatically.



Connecting a Camcorder to the DV IN jack

If your camcorder has a DV output jack, connect it to the DV input jack of your DVD Recorder.



NOTE

- If the input is not selected automatically, press the **INPUT SEL.** button on the remote control to select the DV input.
- Check your camcorder's owner's manual to see how to use the camcorder in this mode.

Step 5 : Connecting the Power Cord

After all connections are complete, plug the power cord in the wall outlet.

"Auto" appears in the panel display. This means that the current time is being set automatically (Auto Program) through the antenna under connection and also the channel is being set. The setup may take a few minutes.

When the DVD Recorder operates normally, the current time is automatically set and displayed in the front panel display.

NOTE

- After the current time is set automatically, the recorder will perform Auto Channel Memory for about 3 minutes. If power is on before finishing the Auto Channel Memory process, Auto Channel Memory will stop.
  In this case, do Auto Channel Memory from **MENU**(see page 31).

Step 6 : Preparing the Remote Control

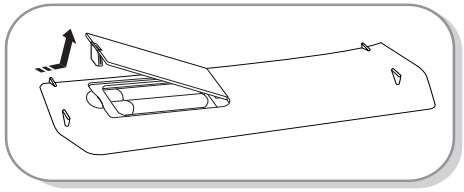
Install Batteries in the Remote Control

- Open the battery cover on the back of the remote.
- Insert two AAA batteries. Make sure that the polarities (+ and -) are aligned correctly.
- Replace the battery cover.

If the remote control does not operate properly:

- Check the polarity + - of the batteries (Dry-Cell)
- Check if the batteries are drained.
- Check if remote sensor is blocked by obstacles.
- Check if there is any fluorescent lighting nearby.

Dispose of batteries according to local environmental regulations. Do not put them in the household trash.



MEMO

13. Circuit Operating Descriptions

13-1 Power

13-1-1 About S.M.P.S (Ringing Choke Converter Method)

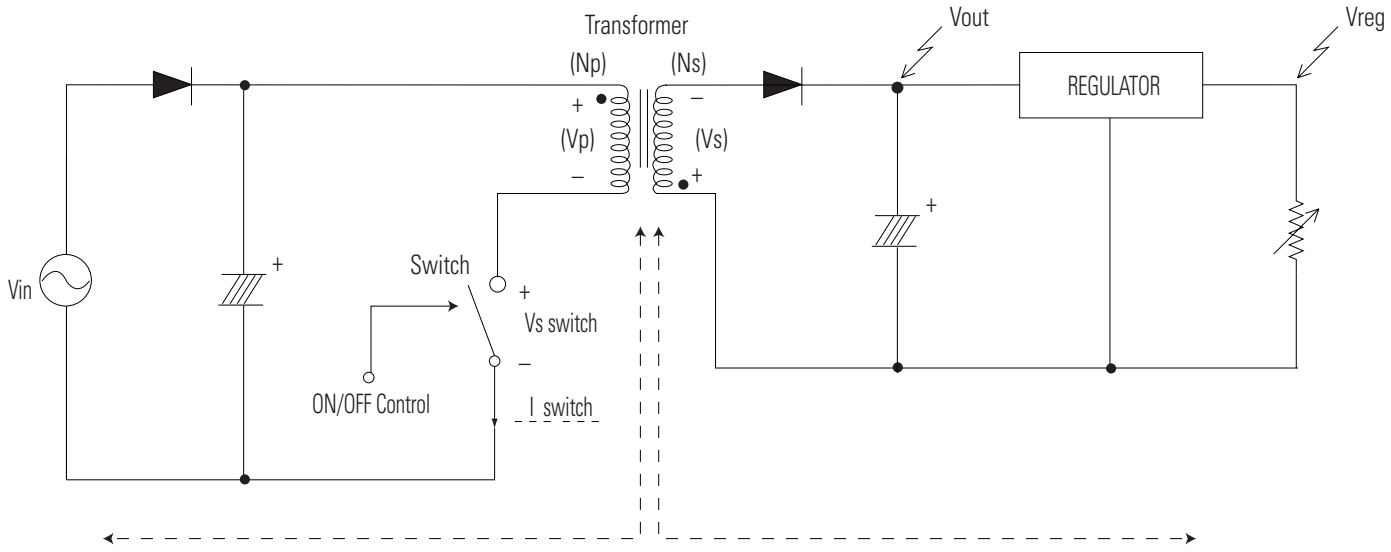


Fig. 13-1

◆Terms

1) 1st : Common power input to 1st winding.
2) 2nd : Circuit followings output winding of transformer.
3) f (Frequency) : Switching frequency (T : Switching cycle)
4) Duty : (Ton/T) x 100

13-1-2 Circuit description [FLY-Back RCC(Ringing Choke Converter)] Control

(a) AC Power Rectification/Smoothing Terminal

1) PADT1, PADT2, PADT3, PADT4 : Convert AC power to DC (Wave rectification).
2) PRCU1 : Smooth the voltage converted to DC.
3) PALT1, PALT2, PACT1, PACT2 : Noise removal at power input/output.
4) PLRU1 : Rush current limit resistance at the momemt of power cord insertion.
   · Without PLRT1, the bridge diode might be damaged as the rush current increases.

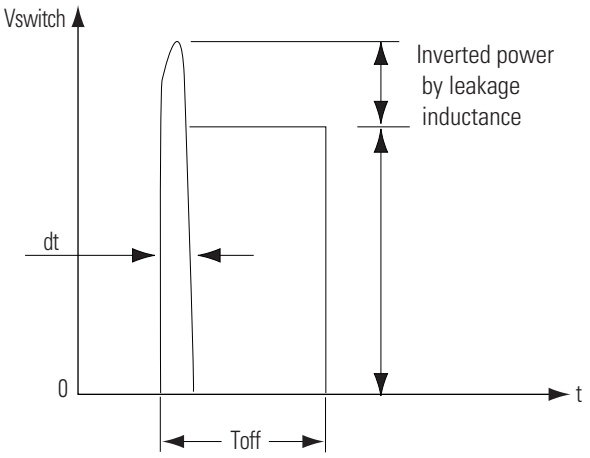


Fig. 13-2

(b) SNUBBER Circuit :
PSRZ1, PSRZ2, PSCX1, PSCZ2, PSDZ1

1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
High inverted power occurs at switch off, because of the 1st winding of transformer :
(V=-L1 xdi/dt. L1 : Leakage Induction)
A very high residual voltage exist on both terminals of PQIZ1 because dt is a very short.

2) SNUBBER circuit protects PQIZ1 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to PSDZ1 and PSCX1 and discharges to PSRZ1, PSRZ2).

3) PSCZ2 : For noise removal

(c) PQIZ1 Vcc circuit

1) PQIZ1 Vcc : PVRL4, PVDL1, PVCL1
① Use the output of transformer as Vcc,because the current starts to flow into transformer while PQIZ1 is active
② Rectify to PVDL1 and smooth to PVCL1.
③ Use the output of transformer as PQIZ1 Vcc : The loads are different before and after PQIZ1 driving. (Vcc of PQIZ1 decreases below OFF voltage , using only the resistance dut to lode increase after PQIZ1 driving.)

(d) Feedback Control Circuit

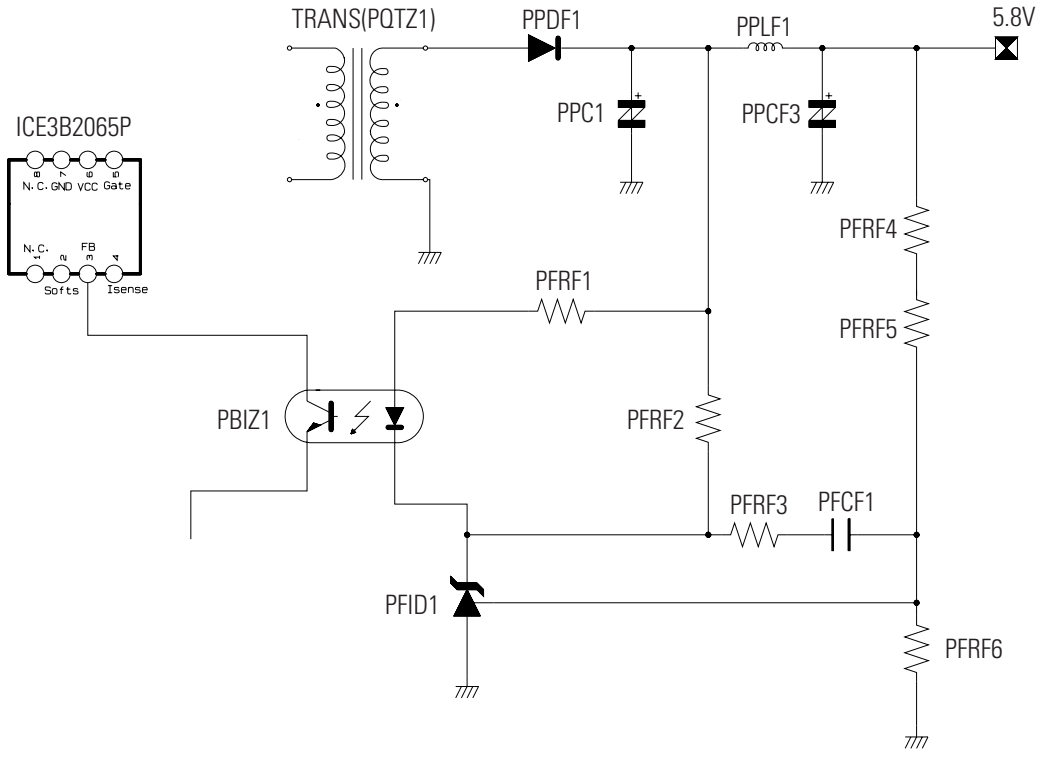


Fig. 13-3

1) F/B terminal of PQIZ1 determines output duty cyle.
2) C-E (Collector-Emitter) of PQIZ1 and F/B potential of PQIZ1 are same.

13-1-3 Internal Block Diagram (Internal Block Diagram of S.M.P.S. Circuit)

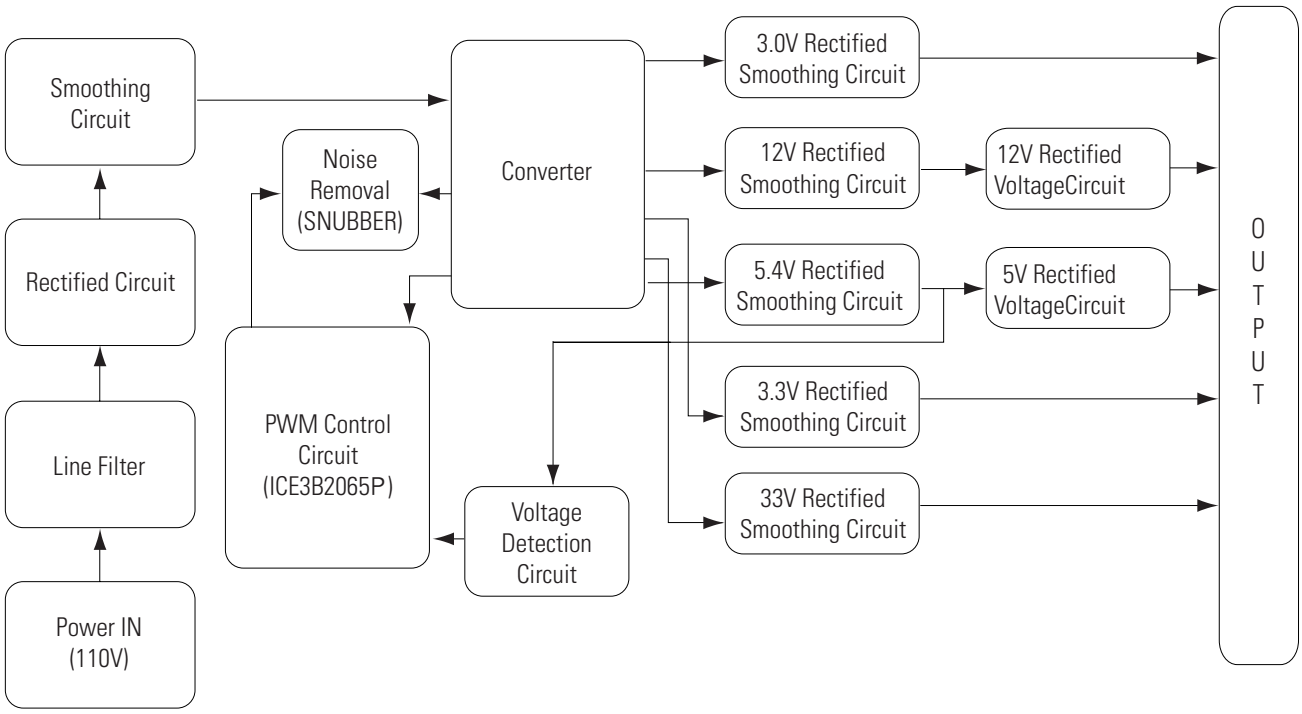


Fig. 13-4

13-2 AV Codec

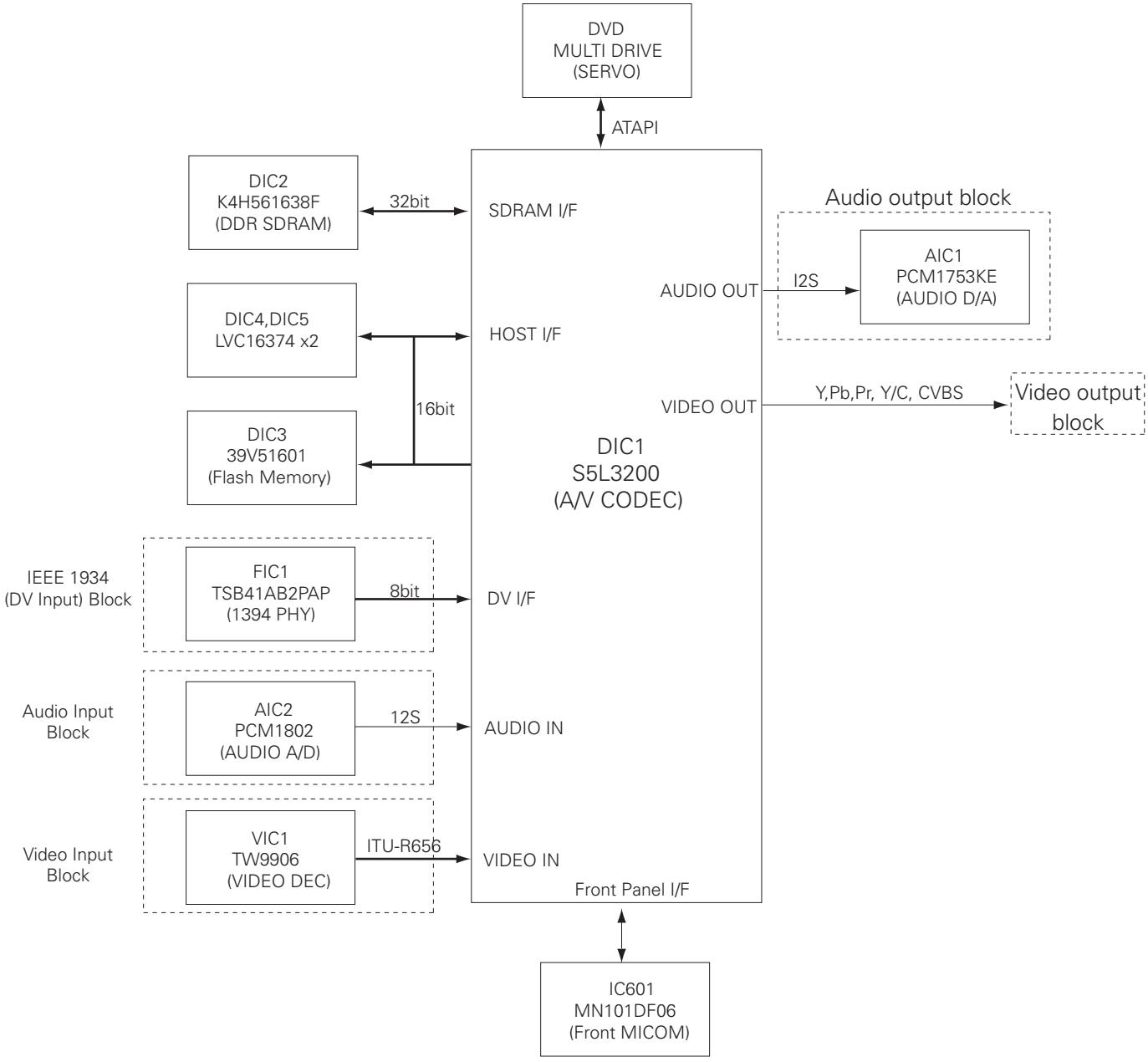


Fig. 13-5

- Main system control
- A/V Encoding/Decoding
- Transcoding/rating
- IEEE 1394 link layer function
- ATAPI interface with DVD-Multi Drive
- Analog Progressive/interlaced video output

13-2-1 GENERAL DESCRIPTION

Samsung S5L3200 MPEG AV Codec is designed to provide a cost-effective, low power size and high performance DVD recorder solution for DVD-VR, DVD-video, DVD-audio & many of CD applications. To reduce total system cost, The S5L3200 also provides the following features: a front-end controller, a back-end decoder, a control CPU with separate 4KB instruction and 4KB data cache, an improved audio DSP, a programmable video encoder with a dual output capability of interlaced and progressive scan, DDR memory controller, 4-channel timers with PWM, I/O ports, 5-channel 10-bit DACs, 2-channel UARTs with handshake, IIC bus interface, IIS bus interface, SPI, dual ATAPI, IEEE1394, USB 1.1 Host I/F and PLL for clock generation.

13-2-2 A/V Processor (DIC1) Functional Description

1) **RISC processor architecture**
   · ARM940T core processor
   · Fully 16/32-bit RISC architecture
   · Harvard cache architecture with separate 4KB instruction and 4KB data cache
   · Protection unit to partition memory and set individual protection attributes for each partition
   · Up to 200 MHz operating frequency.

2) **Memory controller**
   · Address space: 256 M-byte for each bank (total 1 Gbyte space)
   · Supports programmable 8/16-bit data bus width for ROM/SRAM interface
   · Supports 16-bit data bus width for DDR-SDRAM interface
   · 3 memory banks; 2 memory banks for ROM, SRAM etc, 1 memory bank for SDRAM
   · Fully programmable access cycles for all memory banks
   · Supports external wait signal to expand the bus cycle.

3) **Cache memory**
   · 64 way set-associative cache with I-cache (4KB) and Dcache (4KB)
   · 8-words per line with one valid bit and two dirty bits per line
   · Pseudo random or round robin replacement algorithm
   · Write through or write back cache operation to update the main memory
   · Write buffer can hold 8 words of data and four addresses.

Clock & power manager
· Low power consumption
· On-chip PLLs
· Clock can be fed selectively to each function block by software
· Power mode: normal, slow and idle mode (normal mode: normal operating mode, slow mode: low frequencclock without PLL, idle mode: stop CPU clock only)
· Wake up by interrupt from idle mode.

4) **Interrupt controller**
   · 32 interrupt sources (watch dog timer, 4 timers, UARTs, 8 external interrupts, IIC, IIS, SPI, IR, etc.)
   · Edge detect mode on external interrupt source
   · Programmable polarity of rising and falling
   · Supports FIQ (fast interrupt request) for very urgent interrupt request.

5) **Video pre-processor**
   · Noise reduction by motion-compensated temporal filtering
   · Bitmap generation for motion estimation of MPEG encoder
   · Scene change detection.

6) **MPEG video encoder**
   · Encodes MPEG1 & MPEG2 video stream (MP@ML)
   · Efficient motion estimation by hierarchical motion vector search and binary image matching.

7) **MPEG video decoder**
   · Decodes MPEG1 & MPEG2 video stream (MP@ML)
   · Error detection and autonomous error concealment.

8) **Audio DSP**
   · Decodes Dolby AC-3, MPEG1, MPEG2, DTS, MLP, HDCD, AAC and WMA
   · Supports down mix
   · MAC2424 for audio signal processing
   – 24-bit high performance fixed-point DSP coprocessor, 24x24 MAC operation in 1 cycle.
   – 2 multiplier accumulator registers, 4 general accumulator registers, and 8 pointer registers.

13-3 SERVO (DVP Multi Drive)

1) Pick-Up
Data in the disc is processed from the optical pick-up unit (OPU). OPU includes the Elantec chip (EL6912c) which is a highly integrated laser diode driver designed to support multi-standard writable optical drives. This chip also has an IV amplifier with concurrent read and write sampling. The architecture allows reprogramming of the timers to support different media DVD or CD standards, and different speed.

2) A-Chip
A chip is RF processor. This module performs RF signal processing which includes RFIP, RFIN, AGC, RF equal izer. This processor is able to detect tracking error, focus error and various signals such as CE, PE, SBAD, DEFECT, BCA, MIRROR, Wobble, TZC, RC, and RECD.

3) C-Chip
C-Chip is composed of DP1, PRML and WS.
First, the Data processor1 (DP1) performs EFM/EFM+ Demodulation and data is stored in the buffer memory in data processor2 (DP2). DVD data in this buffer is transferred to CSS/ATAPI through error-correction code
(ECC), descramble process and error detection code (EDC).
Second, WS performs the following processes.
① Delay compensation using Shift register
② Sample/Hold pulse generation
③ I/V Gain Control
④ Providing clock for RF chip
⑤ OPC Control signal generation
Lastly, PRML completes the adaptive EQ/VD and Digital PLL.

4) D-Chip
D-Chip consists of Servo DSP, DP2 and 1Mbit memory. Servo DSP is dealing with controlling the servo-mecha nism in DVD recorder. Servo-DSP has the following features.
① Bulit-in 10Bit ADC(8ch), DAC(3ch) and PWM(7ch)
② Step Motor Control Logic: Macro/Micro Step
③ Track Counter: long distance velocity control direct seek
④ Shock/Defect detection
⑤ Header (DVD-RAM)/Land Pre-Pit (DVD-R/RW) Detection
⑥ Several Servo Monitor Signal Detection
⑦ RF IC Interface
⑧ Micom Interface
⑨ Digital Servo Control of focus, tracking, sled and seek
⑩ Disc Auto-Detection
⑪ Automatic Adjustment of the offset, balance and gain of Focus and Tracking Signal
⑫ Direct Seek with Velocity Control
⑬ Step Motor Control: Macro Seek
⑭ De-Track and Lens Shift Detection and Compensation
⑮ Center Error Control
⑯ DVD Layer Jump
⑰ Tilt Detect and Compensation
DP2 performs High Speed ECC and CD DA Decoder.

5) ATAPI Controller

ATAPI (ATA Packet Interface) the standard interface protocol used to connect the CD/DVD Drive to IDE inter face. Data from the front-end is processed to back-end through this ATAPI protocol. Sanyo chip (LC98600CT-XB0) is utilized for ATAPI interface. LC98600CT-XB0 has the following features.

① ECC and EDC correction/addition for CD-ROM data
② Subcode decoding/encoding
③ Spindle servo control
④ CLV/CAV servo control using ATIP data
⑤ ATIP decoding and CRC check functions
⑥ Providing random EFM output for PCA use
⑦ High-accuracy write strategy signal output enabled (CD-R 52x)
⑧ Buffer RAM can be accessed by the microcontroller through the LC98600CT-XB0
⑨ Built-in ATA-PI(IDE) interface (supports Ultra DMA modes 0,1, and 2)
⑩ 52x decoding speed/52x encoding speed supported with 33.8688Mhz
⑪ Maximum transfer speed PIO mode: 16.6 MB/s (with IORDY), Ultra-DMA: 66MB/s (with DMARQ)
⑫ User can freely set the CD main channel, C2 flag, and subcode areas in buffer RAM
⑬ Built-in batch transfer function for transferring (CD main channel, C2 flag, etc., in a single operation)
⑭ Built-in multi-transfer function (allows multiple blocks to be sent to the host automatically in a single operation)

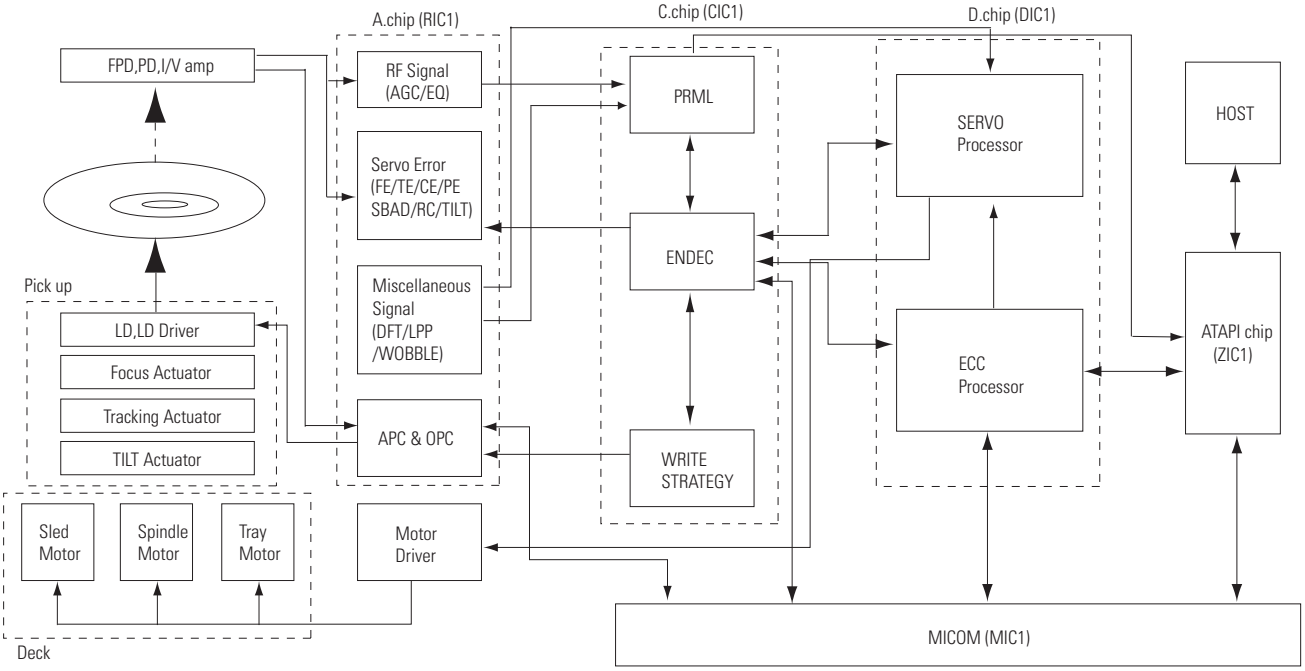


Fig. 13-6

13-4 Video Input

13-4-1 Video Input Outline

DVD-R130 is the two AV Video input. AV 1 Video input is CVBS1 & S-Video1 at the Rear Panel. Line 2 Video input is CVBS2 at the Front Panel.
The analog Video signal select AV 1 or AV 2 by the IC601 (Front Micom).
TIC1 (Video Decoder) diverges from the 27MHz crystal, then generates ITU-R656 (10bits) and 27MHz clock. VIC1 (Video Decoder) does closed caption, copy guard detect processing and A/D conversion of analog Video signal converted into 11bit Digital Video signal (ITU-R656 Format) is outputted via DIC1 (MPEG2 Decoder &Encoder with video Encoder) of digital part.

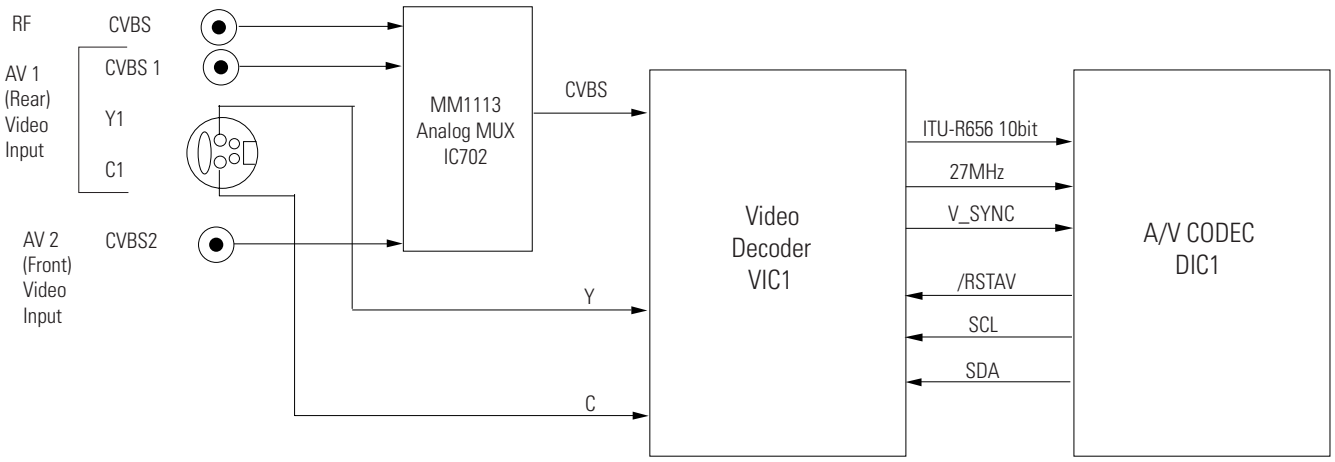


Fig. 13-7

13-4-2 Analog Mux (MM1113)

IC702 is Analog Mux.
As Pin 2, 4 of the IC702 are controlled by the Front Micom, IC702 select RF OF CVBS(Pin1)
Line1 of CVBS[Pin3] and AV2 of CVBS[Pin 5].
The analog Video Signal of IC201 output is selected by the IC601 via VIC1(Video Decoder : TW9906) of analog Video Input parts.

13-4-3 NTSC/PAL Video Decoder (TW9906 : Video Decoder)

The VIC1 (Video Decoder : TW9906) device is a high quality, single-chip digital video decoder that digitizes and decodes all popular baseband analog video formats into digital component video. The VIC1 (Video Decoder : TW9906) supports the analog-to-digital (A/D) conversion of component RGB and YPbPr signals, as well as the A/D conversion and decoding of NTSC, PAL and SECAM composite and S-video into component YCbCr.
This VIC1 (Video Decoder : TW9906) includes four 10-bit 30-MSPS A/D converters. and A/D conversion of 10bit analog Video signal converted into Digital Video signal (ITU-R656 Format) is outputted via DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
The following output formats supply 10-bit 4:2:2 YCbCr to the DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
On CVBS and S-video inputs, the user can control video characteristics such as contrast, Brightness, saturation, and hue via an I2C DIC1 port [PIN V17, V18] interface.
The TW9906 decoder includes methods for advanced vertical blanking interval (VBI) data retrieval. The VBI data processor (VDP) slices, parses, and performs error checking on teletext, closed caption (CC), Copy Guard Detect Processing and other VBI data.

13-5 Video Output

13-5-1 Outline

DIC1 (MPEG2 Decoder & Encoder with video Encoder) diverges from the 13.5MHz crystal, then generates VSYNC and HSYNC.
DIC1 (MPEG2 Decoder & Encoder with video Encoder) does RGB encoding, copy guard processing and D/A conversion of 10bit Video signal converted into analog signal is outputted via amplifer of analog part.

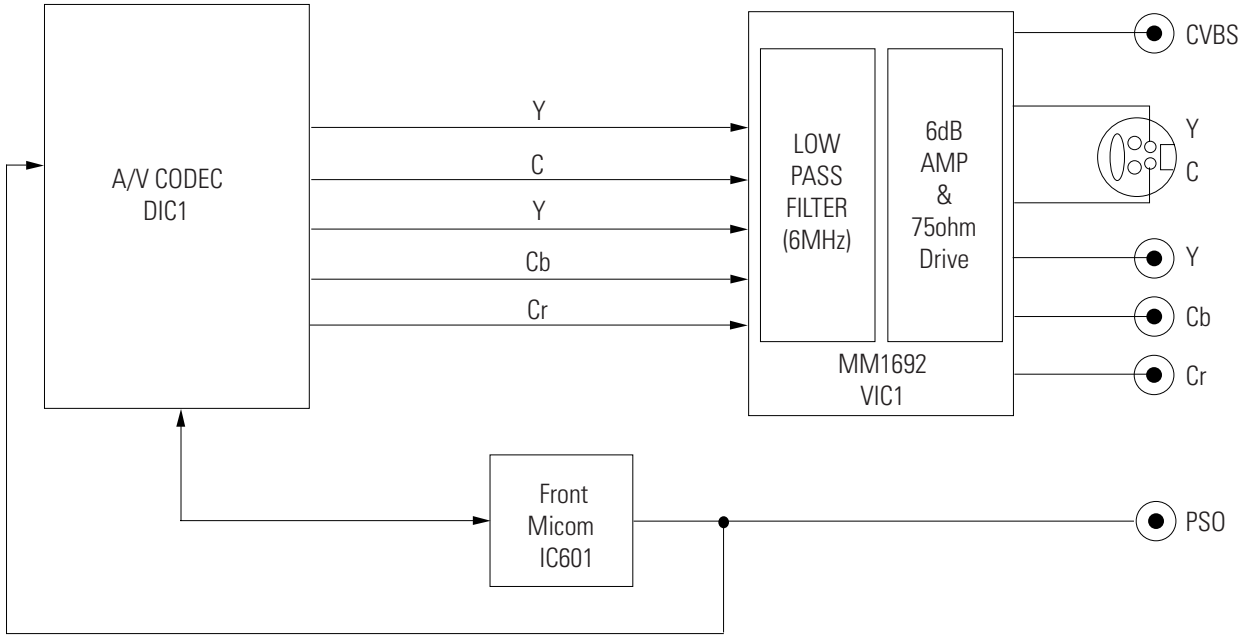


Fig. 13-8

13-5-2 NTSC/PAL Digital

DIC1 inputted from pin E1 with 13.5MHz generates HSYNC and VSYNC which are based on video signal. DIC1 is synchronous signals with decoded video signal.
The above signals, which are CVBS (Composite Video Burst Synchronized), Y(S_Video), C(S_Video), Y(Component)/G(Green), Cr(component)/R(Red), Cb(component)/B(Blue), are selectively outputted 480I(interlaced Video Output), 480P(progressive Video Output) by the Pront button DIC1 adopts 10bit D/A converter.
DIC1 perform video en-coding as well as copy protection.

13-5-3 Amplifier (MM1692)

VIC1 of JACK PCB is 6dB amplifier.
Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resistance.
Because the level of video encoder output is only 1Vpp, the level is adjusted with the special amplifier.
When mute of pin 5 is high active, if the pin is floating and connect to power, the output signal is never outputted.
Y, C, Y(R), Cb(B), Cr(R) outputted from video encoder are inputted to VIC1 [Pin14, 16, 13, 12, 11] respectively. And CVBS Output[Pin 15] is made by Y & C Mixing signal.
The signal to which gain is adjusted by amplifier is outputted from jack via 75ohm Resistance (VDR1,2,4,5,6,).

13-6 Audio

13-6-1 Input Block

This Model has two stereo line input terminals. and internal TV-audio from RF Tuner Block.
These three Analog audio signal source are converted to digital data by Input Block.
Input Block has a Multiplexer (IC203), A/D converter (AIC2).
IC203 change it's output by selection control signal from IC601 (Front Micom).

13-6-2 Output Block

DVD-R130 has two stereo analog line out terminal, and two digital output terminal.
Decoded signal by DIC1 is inputted to AIC1 (D/A Converter), then filtered and amplified by AIC4 (OP-Amp).
And the digital audio signal (IEC-958) is outputted in Optical/Coaxial (S/PDIF) terminal.

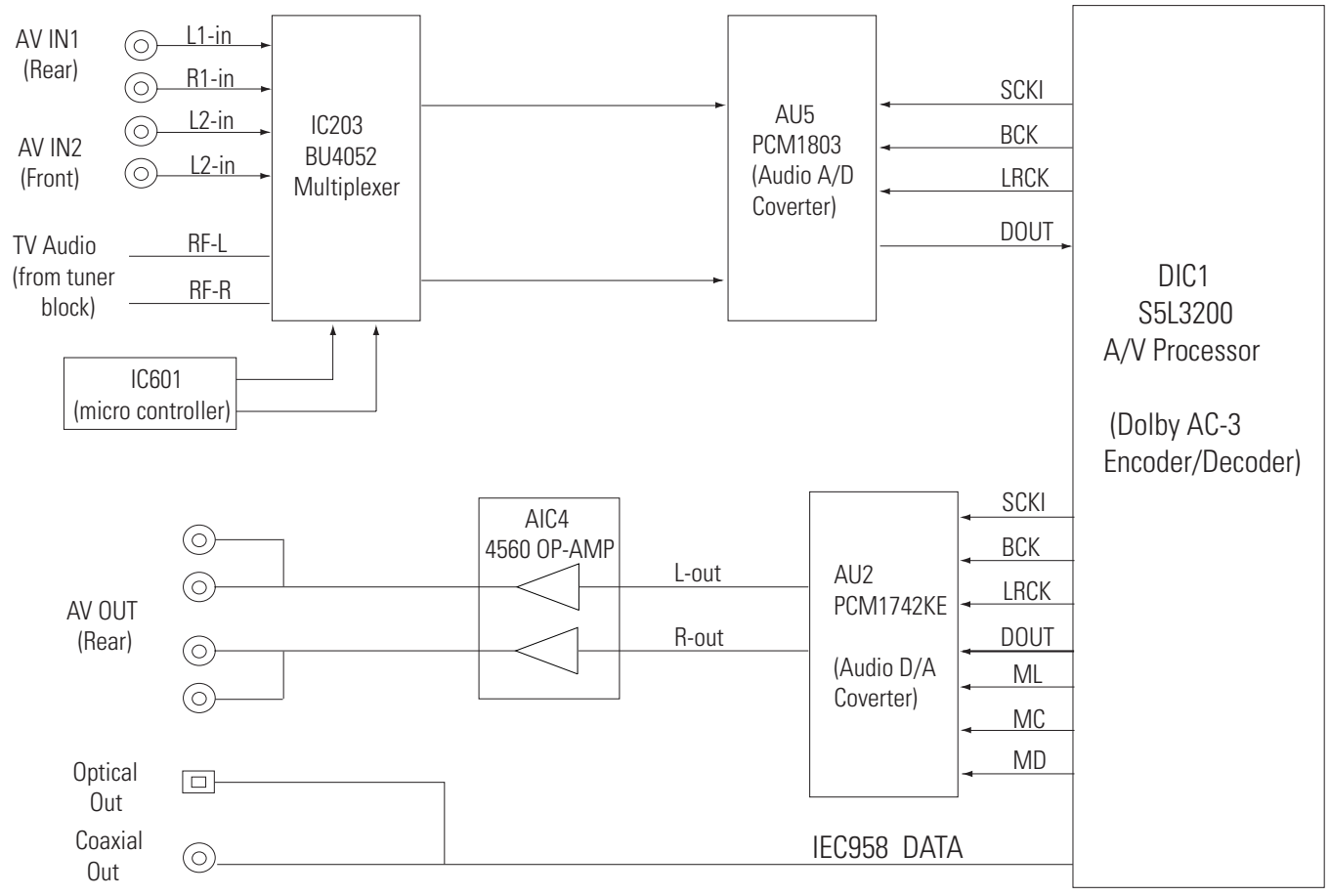


Fig. 13-9

13-7 Tuner

1) Low Pass Filter & High Pass Filter
   This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF (45.75MHz), this filter
   prevents interference.

2) Single tune
   This consists of a filter circuit, RF AMF, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. It is very important part which improves NF (noise figure) and prevents the various of spurious signals.

3) RF AMF
   RF AMF is made of FET (Field Effects Transistor). It is controlled by AGC coming from IF DEMOD block.

4) Double tune
   It consists of a double tuning circuit to improve characteristic of rejection that results in a better band characteristic.

5) Mixer IC (Mixer, OSC, PLL)
   It consists a VHF and UHF OSC and Mixer circuit. We applied mixer to make better characteristic of rejection, it shows especially various beat characteristic.

6) PLL IC
   The PLL IC plays a role selection of Tuner channel. It was built-in three wire PLL IC, charge pump and band driver.
   The minimum of step frequency is 31.25KH z.

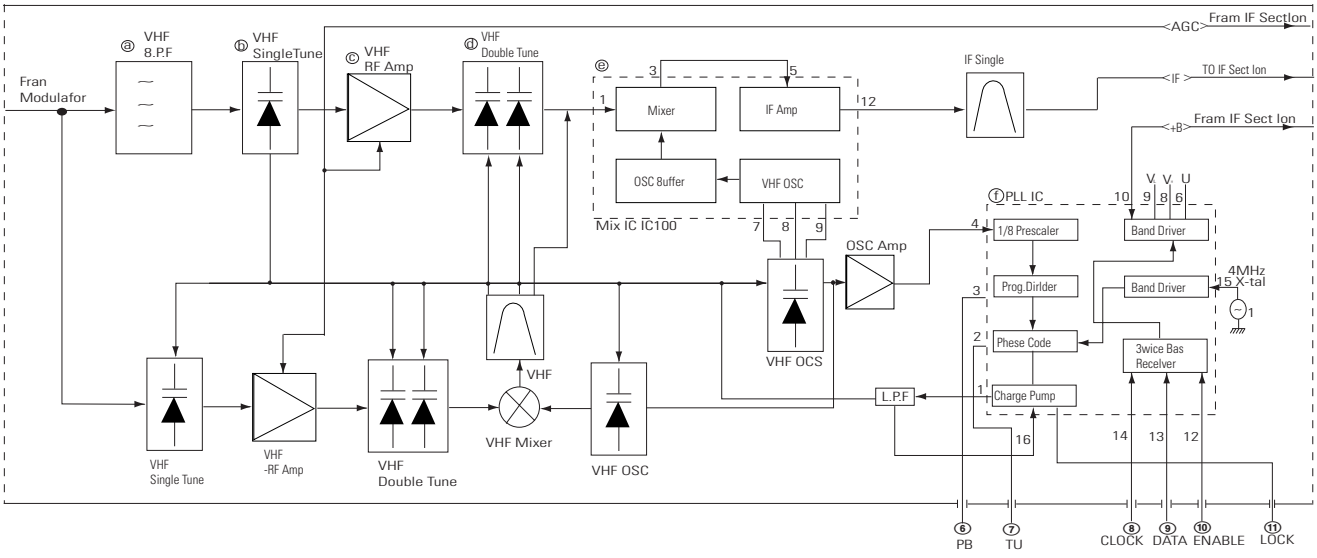


Fig.13-10

13-8 IF

1) SAW FILTER
It passes only needed band of the signal that is converted to IF frequency and decrease the others band to minimize the effect of adjacent channel.

2) RF AGC Control
It used adjusting to determine RF AGC working point in tuner.

3) VCO Tank
When VCO tank detects PLL, it makes the signal which sets a standard.

4) AFT (Auto Frequency Tuning)
AFT automatically controls the oscillator frequency in the tuner, so that it retains a constant level.
It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT.
The 90 degree delayed phase signal is input at the same time to AFT and, the results come out.

5) IF AMP
IF signal , which is selected in Saw filter, is amplified in IF amp frequency enough to be detected. The IF amp has parallel inputs & outputs structure.

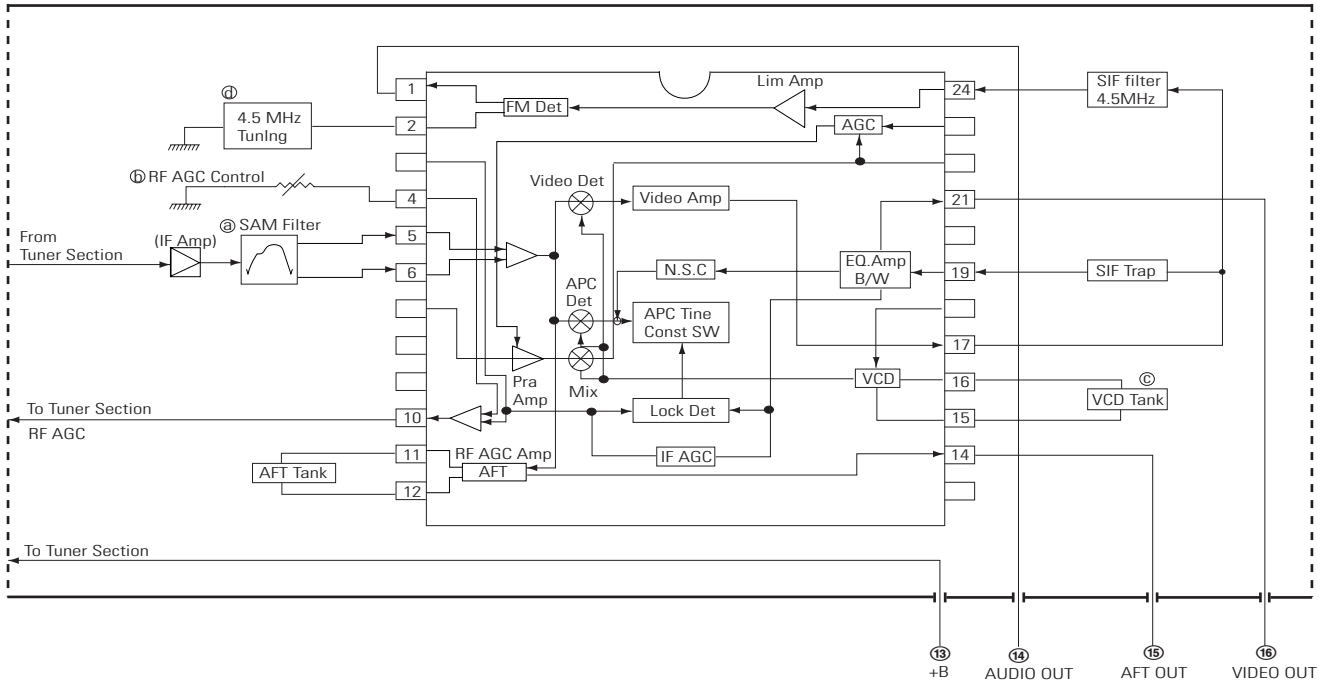


Fig. 13-11

MEMO

14. Reference Information

14-1 About IEEE-1394

14-1-1 Comparison between IEEE-1394 and other digital interfaces

Since there are many different interfaces available, for example, RS422, RS644, and USB, vision system integ rators are very likely to be confused when choos ing the right interface for their application. For the ideal design of a vision syste m, it is vital to have the righ t bus/inte rface. To make things even more complex, ther e is no easy answer such as IEEE-1394 is the best choice.
Furthermore, the new CameraLink standard, promoted by compan ies such as Puln ix, Basler AG, and many frame grabb er companies, seems to be the stat e of the art interface. So why should IEEE-1394 be an alternative?

These questions are as complex as mostvision applicatio ns and there is no simple guideline .
Each of these interfaces offers many benefits and each of them has its individual drawbacks and restric tions. In the table below, we try to give a brief comparison of the most popular interface systems.

	RS 644 [1]	CameraLink	IEEE-1394	USB 2
Topology	Link	Link	Bus	Bus
Windows Driver	Proprietary	Proprietary	Native (Win 200, Win 98)	Native (Win 200, Win 98)
"Guaranteed" Bandwidth	~20 to 40 MByte/s	~255 MBytes/s	~32 MBytes/s[2]	~38 MBytes/s[2]
Cable Length	~10 m @ 40MHz ~20 m @ 200MHz	~10 meters	4.5 meters	5 meters
Wires Needed for 8 Data Bits	22[3]	10	4	2
Parameter Port	No	≥ 1 KByte/s	~8 MBytes/s [2]	~9 MBytes/s [2]

[1] These specs are for a typical 8-bit camera application operating at 20 MHz or at 40 MHz.
[2] 80% of the bus bandwidth is used for image data and 20% is used for parameter data.
[3] 16 wires are used for data bit transfer and two wires each are used for the separate Line Valid, Frame Valid, and Pixel Clock signals required with RS-644 transmission.

A careful comparison of the specifications shown in the table should be your first sele ction guide for the interface. For example, for an integ rator who needs very high speed, USB 2 and IEEE-1394 are not the first choice. On the other hand, these buses are the ones to select in cases
where multiple cameras are needed or cost is a critical issue. Also, the user needs to be aware
that the D-Cam specification curre ntly does not specifically support Line Scan cameras.
However, the specification is open and line scan suppor t could be achieved via Format 7. As
for USB 2, it is still in its infancy in machine vision and we are not aware of any kind of machine vision support.

14-1-2 Fiexibility and Cost Reduction

Many image processing application engineers face a familiar group of problems when designing and building a system. The end user requires system flexib ility, simple adaptation, fast delivery times, and most importantly a reasonable price. With conve ntional systems, whether analogor digital, engine ers must confine them selves to certain combina tions of the existing cameras, frame grabbers, and software. The product choice for this system config uration is limited. Unless the decision is made to use a high cost frame grabber that supports multiple cameras, sometimes known as multi-norm , it is usually not possible to operate camera s with different resolutions from the same frame grabber.

For many applications, the introductio n of digital cameras is hindered by the cost specified by the end custom er, however technically effective digital cameras may be. With the increa sed use of IEEE-1394 in the industrial image processing business, many of these problems are solvable in a sure , safe , and cost effec tive way.

1) Hardware Cost Example

This example compares two simi lar vision systems. Each system uses four Megapixel
resolution digital cameras . The traditio nal solu tion consists of one frame grabber per camera, one parallel digital data cable per camera, and one power supply per camera.
The 1394 solution requi res one hub and one interface card to connect the four cameras , along
with five ine xpensive 1394 cables. The 1394 cables carry power to the cameras directly from the computers internal power supply. (Note tha t not all compute rs are capab le of supplyi ng enough power for the cameras. In some cases a separate power supply may be required.)

Traditional Solution with multiple frame grabbers	Price	1394 Solution	Price
Four Cameras	18,000	Four 1394 Cameras	18,000
Four Frame Grabbers	4,400	One 1394 Interface Card	100
Four Cable	400	One 1394 Hub	120
Four power Supplies	320	Five Cables	150
Total	$23,120	Total	$18,370

14-1-3 Application Examples

Today, there are already applications realizing the benefits of IEEE-1394 technology. For example, at one of our customer sites, Basler was faced with a vision system which has the following specificatio ns:
The machine is a hig h-speed assembly system . Two indepe ndent robots take different par ts (different in size, shape, and reflection) from a support unit and mount these parts on a mounting plate. Timing is crucial, and in the worst case, a part must be taken from the tray every 100 ms. Accuracy of parts mounting is also critical (0.5 mm) . To have a vision system inspecting these operations , 4 cameras (2 on each of the rob ots) are needed:
- 2 low resolution Basler A302f camera s (640 x 480) for checking if the mounting plate is in place
- 2 high-resolution Basler A101f cameras (13 00 x 1030) for checking the components to be mounted.

Since most of the parts are differen t, the two A101f cameras must be reconfigured before almost every image acquisit ion. In the worst case, the AOI, shutter, and som etim es gain need to be adjusted.

1) Solution used before Basler s Intervention

The customer used analog camera s with CCIR resolution (768 x 582) only. This drast ically restricted the number of parts which could be mounted using the robots. Sin ce thes e camera s had no communication por t for configuration, adjusting the AOI was not possible and differ ences in reflection of the parts needed to be adjusted for by driving a flash circuit. All cameras were interfaced into one frame grabber (one PC).

2) Possible solution wih digial cameas using RS 644 OR Camera Link

Using RS 644 or CameraLink based camera s, the customer would need one frame grabber for each camera. It is very likely that the user would need two PCs (one for each robot). Changing the camera-configuration on the fly would require adv ance d grab ber cards since simple grabbers are not capable of easily changing their registers for different AOIs.

3) IEEE-1394 solution

All cameras are attached to a sing le interface card in the PC. The Basler A302f is only used when a new mounting plate is pos itione d by the handler. In norm al operation , only the two Basler A101f cameras will be sending data at the same time and they will be operating at about 10 FPS. This results in a data rate of about 27 MBytes/s, which is well within the specification for IEEE-1394.

Since IEEE-1394 supports bi-directional communication between the camera and the PC, before each frame capture , the PC can easily change resolution, gain , offset, shutter speed, or whatev er is required.

The IEEE-13 94 solution results in the se clea r advanta ges for the custom er:

- Onlyone PC,

- Only one inter face card (very inexpensive compare d with frame grabber cards),

- Easy and inexpens ive cabl ing ,

- The system meet s the expect ations for spee d and accuracy,

- The range of inspect able parts is much bigger than with the old syste m.

MEMO